

**U.S. Department of the Interior
Bureau of Land Management**

DOI-BLM-UT-G010-2014-0209-EA

**Final Environmental Assessment QEP Energy
Company Proposal to Directionally Drill Sixty-Three
Wells from Three Expanded Well Pads Greater Deadman
Bench Area Uintah County, Utah September 2014**

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management



DOI-BLM-UT-G010-2014-0209-EA

Final Environmental Assessment

QEP Energy Company

Proposal to Directionally Drill Sixty-Three

Wells from Three Expanded Well Pads

Greater Deadman Bench Area

Uintah County, Utah

September 2014

Prepared by

U.S. Department of the Interior

Bureau of Land Management

**Location: Township 7 South, Range 23 East, Sections 21, 22, 23, 26, 27, 28,
and 34; Uintah County**

**Applicant/Address: QEP Energy Company
Vernal, UT**

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Finding of No Significant Impact

Finding of No Significant Impact:

Based on the analysis of potential environmental impacts DOI-BLM-UT-G010-2014-0209-EA, I have determined that the proposed action will not have any significant impacts on the environment, and an environmental impact statement is not required.

Signatures:

Recommended by:

Kevin Sadlier	[Date]
Natural Resource Specialist	

Approved by:

/s/ Jerry Kenczka	10/3/2014
Authorized Officer	[Date]
AFM for Minerals	

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Decision Record - Memorandum

Selected Action:

It is my decision to approve QEP Energy Company's (QEP's) proposal to expand well pads RW 22-22B, RW 42-26B, and RW 42-28B to drill 63 new natural gas wells, install 4.0 miles of new surface and 3.4 miles of new buried pipelines, install approximately 1,834 feet of power lines, and re-route approximately 1,033 feet of an existing County road in Township 7 South, Range 23 East, Sections 21, 22, 23, 26, 27, 28 and 34 of the Red Wash area within the Greater Deadman Bench Region, Uintah County, Utah. The selected alternative would result in 64 acres of surface disturbance.

This EA provides a site-specific analysis of potential impacts that would result from the implementation of the selected alternative, and is tiered to the Greater Deadman Bench Region Final Environmental Impact Statement (EIS)(BLM 2008a).

Conditions of Approval:

This decision is contingent on meeting all stipulations and monitoring requirements listed below, which were designed to minimize and/or avoid impacts.

Table 1. Applicant-Committed Resource Protection Measures

Well Pad/Area	Resource Protection Measures
Erosion Control	<ul style="list-style-type: none"> • If a new road is needed to replace an existing road (realignment), QEP would reclaim and revegetate the existing road (BLM 2008c). • QEP would construct well pads and facility sites to prevent overland flow of water from entering or leaving sites through the use of berms, terraces, and grading depressions (BLM 2008b). • Diversion ditches constructed to reroute drainages around well pads would be designed to divert the water back to the original channel. If the water cannot be diverted back to the original channel, then the water would be diverted to the nearest channel with energy dissipating devices installed to prevent channel degradation (BLM 2008c). • Planned access roads and surface-disturbing activities would conform to standards outlined in the BLM and Forest Service publication: Surface Operating Standards for Oil and Gas Development, Gold Book 4th Edition (USDI and USDA 2007) (BLM 2008c).
Vegetation	<ul style="list-style-type: none"> • QEP would monitor and control noxious and invasive weeds along access road use authorizations, pipeline route authorizations, well sites, or other applicable facilities by spraying or mechanical removal. On BLM-administered land, a Pesticide Use Proposal would be submitted and approved prior to the application of herbicides, pesticides, or other hazardous chemical (BLM 2008c). • QEP will work with the Authorized Officer (AO) to monitor the success of interim and final reclamation. QEP and the AO will perform regular inspections on chosen sites reclaimed two years prior. The two-year gap will allow the seed to become established and give the vegetation two full growing seasons for a better measure of success. If QEP and the AO determine the reclamation has not been successful, QEP will reseed the location (BLM 2008c). • Power washing of all construction and drilling equipment would occur prior to the equipment entering the Project Area from outside the Vernal Field Office area (BLM 2008b).
Wildlife – General	<ul style="list-style-type: none"> • Reserve pits would be fenced and equipped (netted) to deter entry by birds, and deny access to wildlife. Drilling fluids would be immediately removed after well completion. After drilling and completion operations, any visible or measurable layer of oil will be removed from the surface of the reserve pit and the pit will be kept free of oil (BLM 2014). • QEP has committed to construct a containment dike completely around those production facilities which contain fluids (I.e. production tanks, produced water tanks). These dikes would be constructed of compacted impervious subsoil, hold 110% of the capacity of the largest tank, and be independent of the back cut (BLM 2008b)

Well Pad/Area	Resource Protection Measures
Wildlife – Raptors	<ul style="list-style-type: none"> • No construction and development activities would occur with 0.25 mile of burrowing owl nests between March 1 and August 31 (BLM 2008b) at well pad RW 42–26B. • No construction and development activities would occur with 0.5 miles of Ferruginous hawk nests between March 1 and August 1 (BLM 2008b) at well pad RW22–22B and RW42–28B. • No drilling will occur within 0.5 mile of a Ferruginous hawk nests from March 1 to August 1 and no permanent structures would be located within 0.25 mile, unless topography screens the nests from construction operations (BLM 2008c) at well pad RW22–22B and RW42–28B. • If other raptor nests are identified in the Project Area, the protective buffers and timing limitations from the Approved RMP would apply (BLM 2008b). • Unless otherwise agreed to by the AO in writing, power lines shall be constructed in accordance with the standards outlined in <i>Suggested Practices for Raptor Protection on Power Lines</i>, (APLIC 1996). QEP would construct power lines in accordance with these standards or will assume the burden and expense of proving pole designs not shown in the referenced publication are "raptor safe". A raptor expert acceptable to the AO shall provide such proof (BLM 2008c). • As directed by the AO, QEP would place raptor perch guards on power line poles in areas near sensitive wildlife habitat areas such as sage-grouse leks and prairie dog towns (BLM 2008c). • Artificial nest platforms will be constructed as directed by the AO within the Project Area in order to mitigate any unavoidable losses of potential, natural nesting areas (BLM 2008c).
Cultural Resources	<ul style="list-style-type: none"> • Equipment operators would be informed that if a cultural site is uncovered during construction, activities in the vicinity would immediately cease and the AO would be notified (BLM 2008c).
Paleontological Resources	<ul style="list-style-type: none"> • If paleontological resources were uncovered during ground disturbing activities, QEP would suspend all operation that would further disturb such materials and would immediately contact BLM's AO, who would arrange for a determination of significance and, if necessary, recommend a recovery or avoidance plan (BLM 2008c).

Rationale:

The subject lands were leased for oil or gas development under authority of the Mineral Leasing Act of 1920, as modified by the Federal Land Policy and Management Act of 1976, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987. The lessee/operator has the right to explore for oil and gas on the lease as specified in 43 CFR 3103.1-2, and if a discovery is made, to produce oil and/or natural gas for economic gain.

The selected alternative meets the BLM's need to acknowledge and allow development of valid existing leases. The BLM objective to reduce impacts is met by the imposing of resource protection measures to protect other resource values.

Land Use Plan Conformance:

The selected alternative is in conformance with the BLM Utah Vernal Field Office Approved Resource Management Plan and Record of Decision (BLM 2008b) and the terms of the applicable leases.

The selected alternative is consistent with the 2011 Uintah County General Plan, as amended (County Plan), that encompasses the location of the proposed project. In general, the County Plan indicates support for development proposals such as the selected alternative through the plan's emphasis on multiple-use public land management practices, responsible use, and optimum utilization (Uintah County 2011).

The State of Utah School and Institutional Trust Lands Administration (SITLA) has leased much of the nearby state land for oil and gas production. Because the objectives of SITLA are to produce funding for the state school system, and because production on federal leases could lead to further interest in drilling on state leases in the area, it is assumed that the selected alternative is consistent with the objectives of the state.

Public Involvement:

The proposed project was posted on the ePlanning NEPA Register on September 2, 2014. No public requests for information on the project or public comments were received.

Alternatives Considered:

The EA analyzed the Proposed Action and No Action alternatives. Onsite visits were conducted by Vernal Field Office Personnel. The onsite inspection reports do not indicate that any other locations be proposed for analysis. The No Action alternative was not selected because it would not best meet the BLMs need to acknowledge and allow development of valid existing leases.

Appeal or Protest Opportunities:

This decision is effective upon the date it is signed by the authorized officer. The decision is subject to appeal. Under BLM regulation, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all

supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, Utah State Office, P.O. Box 45155, Salt Lake City, Utah, 84145-0155, within 20 business days of the date this Decision is received or considered to have been received.

If you wish to file a petition for stay, the petition for stay should accompany your notice of appeal and shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied;
2. The likelihood of the appellant's success on the merits;
3. The likelihood of irreparable harm to the appellant or resources if the stay is not granted; and,
4. Whether the public interest favors granting the stay.

Signature:

Authorizing Official:

<u>/s/ Jerry Kenczka</u>	<u>10/03/2014</u>
Authorized Officer	Date

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Acronyms and Abbreviations

µg/m ³	micrograms per cubic meter
APD	Application for Permit to Drill
AO	Authorizing Officer
BLM	Bureau of Land Management
BMP	Best Management Practice
BOP	Blow Out Preventer
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIAA	Cumulative Impact Analysis Area
CO	Carbon Monoxide
COA	Condition of Approval
DR	Decision Record
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
GDBR	Greater Deadman Bench Region
GHG	Greenhouse Gas
GIS	Geographic Information System
HAP	Hazardous Air Pollutant
ID	Interdisciplinary
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics Space Administration
NEPA	National Environmental Policy Act
NI	Not Impacted
NO ₂	Nitrogen Dioxide
NO _x	Nitrous Oxide
NOAA	National Oceanic and Atmospheric Administration
NP	Not Present
O ₃	Ozone
PI	Potentially Impacted
PM	Particulate Matter
PM _{2.5}	particulate matter less than 2.5 microns in diameter
PM ₁₀	particulate matter less than 10 microns in diameter
ppb	parts per billion
PPH	Preliminary Priority Habitat
QEP	QEP Energy Company
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right-of-way
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Office
SITLA	School and Institutional Trust Lands Administration
SO ₂	Sulfur Dioxide
SO _x	Sulfur Oxides
SWD	Salt Water Disposal
TPY	Tons per Year
UDWR	Utah Division of Wildlife Resources

U.S.C.	United States Code
UDAQ	Utah Department of Air Quality
USFWS	U.S. Fish and Wildlife Service
USGCRP	U.S. Global Change Research Program
VOC	Volatile Organic Compound

Chapter 1. Introduction and Need for Proposed Action

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1.1. Introduction

This Environmental Assessment (EA) has been prepared to analyze the potential impacts of a proposed QEP Energy Company (QEP) natural gas development project in the Red Wash area of the Greater Deadman Bench Region (GDBR). QEP proposes to construct and operate natural gas well pads, wells, and associated pipelines in Township 7 South, Range 23 East, Sections 21, 22, 23, 26, 27, 28, and 34 in the GDBR in Uintah County, Utah. The EA is a site-specific analysis of potential impacts that would result from the implementation of the Proposed Action or alternatives to the Proposed Action. This EA incorporates analysis from the Greater Deadman Bench Final Environmental Impact Statement (EIS) (BLM 2008a) as indicated. The EA assists the Bureau of Land Management (BLM) in project planning, ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts would result from the Proposed Action. “Significance” is defined by NEPA and is found in regulation 40 Code of Federal Regulations (CFR) 1508.27. An EA provides evidence for determining whether to prepare an EIS or a Finding of No Significant Impact (FONSI) statement. A FONSI statement briefly presents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects) or “significant” impacts to resources. If the Authorized Officer (AO) determines that this project has “significant” impacts, then the BLM would prepare an EIS for the project. If not, the AO would sign a Decision Record (DR) for the EA approving the selected alternative.

1.2. Purpose and Need for the Proposed Action

The BLM’s purpose is to allow QEP to develop its existing federal leases in order to meet domestic demands for oil and natural gas while also preventing unnecessary or undue degradation to public land. The proposed development would exercise existing lease rights to drill for, extract, remove, and market commercial quantities of oil and natural gas. The Mineral Leasing Act of 1920, as amended, and the regulations and policies by which it is implemented recognize the right of lease holders to develop federal mineral resources to meet continuing needs and economic demands, so long as unnecessary or undue degradation is not incurred. This includes the right to build and maintain necessary improvements, subject to lease terms and conditions. The lessee has the right to use as much of the leased lands as is necessary to explore, develop, and dispose of the leased resource (43 CFR 3101.1-2) subject to lease terms, conditions, and stipulations.

The BLM’s need is to respond to the applicant’s proposal while minimizing environmental impacts and preventing unnecessary or undue degradation of the land. The Federal Land Policy and Management Act of 1976 (FLPMA) mandates that the BLM manage public lands on the basis of multiple use [43 United States Code (U.S.C.) § 1701(a)(7)]. Minerals are identified as one of the principal uses of public lands in Section 103 of FLPMA [43 U.S.C. § 1702(c)]. The FLPMA mandates that these uses be permitted in a manner that assures adequate protection of other resource values.

1.3. Conformance with BLM Land Use Plans

The Proposed Action would be in conformance with the BLM Utah Vernal Field Office Approved Resource Management Plan (RMP)/Record of Decision (ROD) (BLM 2008b) and the terms of the applicable leases. The RMP/ROD recognizes valid existing rights (RMP/ROD, page 21). The Minerals and Energy Resources Management Objectives encourage the drilling of oil and

gas wells by private industry (RMP/ROD, page 97). The Approved RMP/ROD also allows for processing applications, permits, operating plans, mineral exchanges, and leases on public lands in accordance with policy and guidance. It also allows for management of public lands to support goals and objectives of other resources programs, respond to public requests for land use authorizations, and acquire administrative and public access where necessary (RMP/ROD, page 86). The BLM has determined that the Proposed Action would not conflict with other decisions in the Vernal Field Office Approved RMP/ROD (BLM 2008b).

1.4. Relationship to Statutes, Regulations, or Other Plans

The Proposed Action and No Action Alternative are consistent with federal, state, and local laws, regulations, and plans (see sections below). Refer to Section 1.5 (pages 1-7 through 1-8) of the GDBR Final EIS (BLM 2008a) for additional information on applicable statutes, regulations, and other policy considerations, and Section 1.8 (pages 1-11 through 1-15) for additional information on permit requirements.

Federal Laws and Statutes

The subject lands were leased for oil or gas development under authority of the Mineral Leasing Act of 1920, as amended, in part, by the FLPMA of 1976, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987.

State and Local Laws and Statutes

There are no comprehensive State of Utah plans for the vicinity of the Proposed Action. The Proposed Action is consistent with the 2011 Uintah County General Plan, as amended (County Plan), that encompasses the location of the Proposed Action. In general, the County Plan indicates support for development proposals such as the Proposed Action through the plan's emphasis on multiple-use public land management practices, responsible use, and optimum utilization (Uintah County 2011).

The State of Utah School and Institutional Trust Lands Administration (SITLA) has leased much of the nearby state land for oil and gas production. Because the objectives of SITLA are to produce funding for the state school system, and because production on federal leases could lead to further interest in drilling on state leases in the area, it is assumed that the Proposed Action is consistent with the objectives of the state.

Utah's Standards for Rangeland Health (BLM 1997) address upland soils, riparian/wetlands, desired and native species, and water quality. These resources are analyzed later in this document or, if not affected, are listed in Appendix A.

1.5. Identification of Issues

BLM reviewed QEP's proposed activities to assess the type and magnitude of potential impacts to resources and resource uses. A list of all resources considered is contained in Appendix A, Interdisciplinary (ID) Team Checklist. The "Potentially Impacted" (PI) resources, as identified by the BLM, are listed below with issue statements describing the potential impact. These resources are carried forward for description in the Affected Environment section (Chapter 3) and analysis in the Environmental Impacts section (Chapter 4) of this EA. Resources that the BLM identified

as “Not Impacted” (NI) by the Proposed Action or “Not Present” (NP) in the Project Area, as documented in the ID Team Checklist, were not carried forward for detailed analysis.

1.5.1. Air Quality and Greenhouse Gas Emissions

Issue 1: Emissions from earth-moving equipment, vehicle traffic, drilling and completion activities, production operations, daily tailpipe and fugitive dust emissions, and other sources could adversely affect air quality and contribute to Greenhouse Gas Emissions (GHGs).

1.5.2. Invasive Plants/Noxious Weeds, Soils, and Vegetation

Issue 1: Expansion of three well pads and construction of associated gathering pipelines, access roads, and power lines would result in an estimated 64 acres of surface disturbance, which would result in the potential spread and establishment of invasive plants and noxious weeds.

Issue 2: Expansion of three well pads and construction of associated gathering pipelines, access roads, and power lines would result in an estimated 64 acres of surface disturbance, which would result in direct and indirect impacts to vegetation and soils.

1.5.3. Livestock Grazing and Rangeland Health Standards

Issue 1: The Proposed Action would result in an estimated 64 acres of surface disturbance that could reduce the quantity and quality of forage, fragment the grazing allotments, increase potential for vehicle/livestock collisions, increase potential for damage to range improvements, and result in other potential impacts to livestock operators and the ability of allotments to meet rangeland health standards.

1.5.4. Wildlife

1.5.4.1. Non-USFWS Designated

Issue 1: Activities associated with the Proposed Action may have adverse effects on general wildlife species and water depletions could affect fish species and fisheries including BLM sensitive species and State of Utah species of concern in the Colorado River Basin. The Project Area overlaps white-tailed prairie dog habitat along the access road by well pad RW 42-26B. The Project Area overlaps crucial yearlong habitat and fawning habitat for pronghorn, but does not overlap any crucial habitat for elk or mule deer.

1.5.4.2. Migratory Birds (including raptors)

Issue 2: Migratory birds and raptors, including ferruginous hawk and burrowing owl habitat, are present in the Project Area and could be affected by surface disturbance and other project-related activity.

1.5.4.3. Threatened, Endangered, Proposed or Candidate Wildlife Species

Issue 3: The greater sage-grouse is a U.S. Fish and Wildlife Service (USFWS) candidate species, a wildlife species of concern by the Utah Division of Wildlife Resources (UDWR), and a BLM sensitive species. The Project Area overlaps greater sage-grouse brood rearing habitat, occupied habitat, and sage-grouse winter habitat, which is identified as Preliminary Priority Habitat (PPH) in BLM IM 2012-043. The proposed RW 42-26B well pad and pipelines would overlap sage-grouse PPH.

Issue 4: Four endangered fish species are historically associated with the Upper Colorado River Basin and its tributaries. Fresh water used for drilling, completion, and dust suppression activities associated with the Proposed Action would come from water depletions of the Colorado River Basin that could affect these federally listed fish species.

Chapter 2. Description of Alternatives

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2.1. Introduction

This chapter provides a description of the Proposed Action and No Action Alternative. No additional action alternatives have been identified. This EA considers a No Action Alternative to provide a baseline for comparison of the impacts of the Proposed Action. The Proposed Action integrates the terms and conditions in the Greater Deadman Bench Oil and Gas Producing Region ROD (BLM 2008c).

2.2. Proposed Action

QEP proposes to develop natural gas resources in Township 7 South, Range 23 East, Sections 21, 22, 23, 26, 27, 28, and 34 of the Red Wash area within the GDBR, Uintah County, Utah (Figure 2.1, “General Location and Proposed Action” (p. 8)). The Proposed Action would result in an estimated 64 acres of surface disturbance. Specifically, QEP’s Proposed Action includes the following components as depicted on Figure 2.1, “General Location and Proposed Action” (p. 8) and described in Table B.1, “Proposed New Wells and Associated Well Pads” (p. 84)):

- Directional drilling of up to 63 new natural gas wells on three expanded well pads (Figure 2.1, “General Location and Proposed Action” (p. 8), Appendix B), including:
 - 63 new wells drilled from three well pads (22-22B, 42-26B, and 42-28B) that would be expanded to accommodate topsoil stockpiles, reserve pits, excess cut stockpiles, and other uses necessary to develop the proposed wells (42.3 acres of surface disturbance).
- Installation of new gas and liquids pipelines to collect and transport gas and liquids from the wells to existing infrastructure, including:
 - Installation of approximately 3.4 miles (20.2 acres of surface disturbance) of new buried pipelines.
 - Installation of approximately 4.0 miles of new surface pipelines.¹
- Surface and buried pipelines are co-located where feasible to minimize the overall length of new pipeline corridor.²
- Installation of approximately 1,834 feet (0.7 acres of surface disturbance) of power lines.
- Re-routing approximately 1,033 feet (0.7 acres of surface disturbance) of an existing County road to the south side of the proposed expanded well pad RW 22-22B.

¹ Installation of the proposed surface pipelines for RW 22-22B, 42-26B, and 42-28B would not require clearing or blading of vegetation. As a result, there would be no new surface disturbance associated with installation of the surface pipelines.

² The surface 10” or smaller frac water distribution lines for RW 42-28B and RW 22-22B follow the same route. Surface 3” or poly gas sales lines would be installed following the same path as buried pipelines at well pads RW 22-22B and RW 42-28B. The surface 3” or poly gas sales lines would follow the same path as the surface 10” or smaller frac water distribution line at RW 42-26B. Buried pipelines (16” and 8”) would be installed in the same trench at RW 22-22B and RW 42-26B.

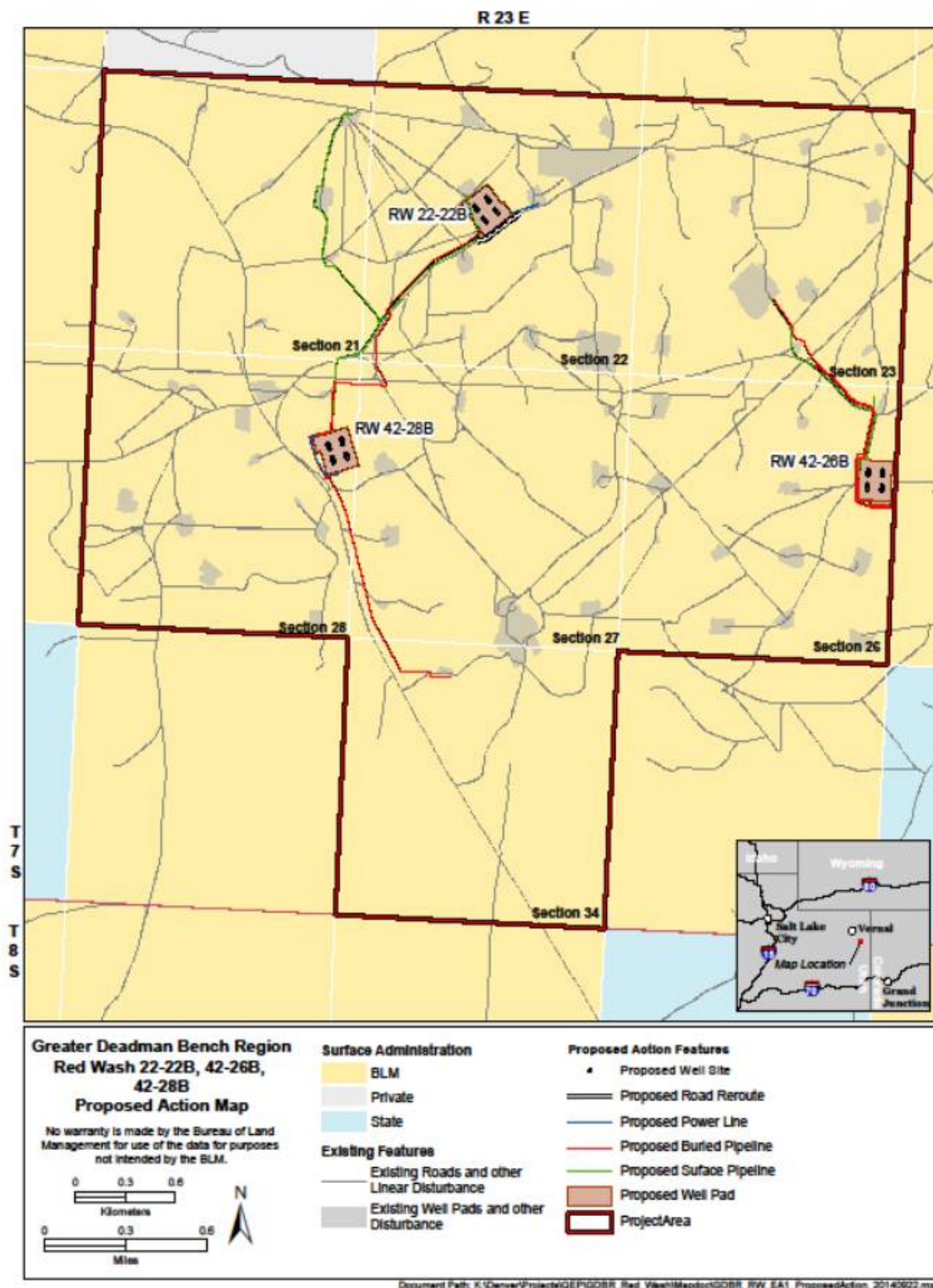


Figure 2.1. General Location and Proposed Action

Chapter 2 Description of Alternatives
Proposed Action

Table 2.1. Proposed Action Development and Surface Disturbance

Feature	RW 22-22B Well Pad Expansion	RW 42-26B Well Pad Expansion	RW 42-28B Well Pad Expansion	Total
Wells and Well Pads				
Number of Proposed New Wells on Well Pads	31	16	16	63
Proposed New Well Pad Disturbance (acres)	14.3	13.5	14.5	42.3
Existing Well Pad and Other Disturbance (acres)	-	-	-	186.9¹
Access Roads				
Proposed New Roads (feet) ²	1,033	0	0	1,033
Proposed New Road Disturbance (acres) ²	0.7	0	0	0.7
Existing Roads (miles)	-	-	-	54.6³
Existing Roads (acres)	-	-	-	119.2³
Buried Gas and Liquids Pipelines				
Proposed New Buried Pipelines up to 16-inch Diameter (miles) ⁴	0.7	1.1	1.6	3.4
Proposed New Buried Pipelines up to 16-inch Diameter Disturbance (acres) ^{5,6}	4.6	6.6	9.1	20.2⁶
Proposed New Surface Pipelines up to 10-inch Diameter (miles)	1.3 ⁷	1.3 ⁷	1.4	4.0
Proposed New Surface Pipelines up to 10-inch Diameter Disturbance (acres)	0	0	0	0⁸
Existing Buried Pipelines (miles)	-	-	-	~⁹
Existing Buried Pipelines Disturbance (acres)	-	-	-	~⁹
Existing Surface Pipelines (miles)	-	-	-	~¹⁰
Existing Surface Pipelines Disturbance (acres)	-	-	-	~¹⁰
Power Lines				
Proposed New Power Lines (feet)	539	0	1,295	1,834
Proposed New Power Line Disturbance (acres)	0.2	0	0.5	0.7
Surface Disturbance Totals				
Total Acres of New Surface Disturbance	19.8	20.1	24.1	64.0
Total Existing Disturbance	-	-	-	306.1¹¹
Total Disturbance including Existing and Proposed Development (acres)	-	-	-	370.1

Feature	RW 22-22B Well Pad Expansion	RW 42-26B Well Pad Expansion	RW 42-28B Well Pad Expansion	Total
Total Acres of New Long-Term Disturbance (acres)¹²	7.4	7.5	7.0	21.9
<p>Source: QEP 2014</p> <p>Note: The Project Area is defined as the full extent of USGS quadrangle sections of land that intersect Proposed Action features.</p> <p>¹Existing well pad and other disturbance totals includes all well pads in the Project Area, including those where no additional development is proposed under the Proposed Action. This total also includes other existing surface disturbance in the Project Area digitized based on aerial imagery.</p> <p>²Assumes a 30-foot construction width, and an 18-foot running surface.</p> <p>³Existing road mileage and surface disturbance totals for roads includes total existing miles and acreage of roads in the Project Area. This total also includes other linear surface disturbance in the Project Area digitized based on aerial imagery.</p> <p>⁴Includes all proposed buried pipelines as identified in the APDs and described in Section 2.2.5 (<i>Pipelines</i>).</p> <p>⁵Assumes a 50-foot temporary construction width and a 30-foot permanent width for the buried pipeline corridors.</p> <p>⁶Buried pipelines (16" and 8") would be installed in the same trench at RW 22-22B and RW 42-26B. Surface disturbance numbers account for buried pipelines that would be placed in the same trench (i.e., no double counting disturbance for pipelines in the same trench).</p> <p>⁷Includes all proposed surface pipelines identified in the APDs and described in Section 2.2.5 (<i>Pipelines</i>). The surface 10" or smaller frac water distribution lines for RW 42-28B and RW 22-22B follow the same route. A surface 3" or poly gas sales line would follow the same path as the buried pipelines for RW 42-28B and RW 22-22B. At RW42-26B the surface frac water distribution line and 3" or poly gas sales line would follow the same path.</p> <p>⁸Installation of surface pipelines would not require blading or clearing of vegetation. As a result, surface pipelines would not result in any new surface disturbance.</p> <p>⁹Existing data for buried pipelines in the Project Area is unavailable. Aerial imagery was used to digitize existing surface disturbance in the Project Area and all disturbance from linear scarring/disturbance is included under existing disturbance for access roads.</p> <p>¹⁰Existing data for surface pipelines in the Project Area is unavailable. In general, installation of surface pipelines would not require any clearing of vegetation. As a result, this EA assumes no surface disturbance associated with existing surface pipelines or installation of proposed surface pipelines.</p> <p>¹¹Includes all existing surface disturbance in the Project Area.</p> <p>¹²Long-Term surface disturbance is disturbance that persists after successful interim reclamation. Interim reclamation estimates are based on the well pad reclamation estimates included in the APDs and an 18-foot permanent running surface for new roads. No long-term disturbance for pipelines is assumed as surface disturbance associated with buried pipelines would be fully reclaimed during interim reclamation. No additional long-term surface disturbance for power lines is assumed, as the power lines would be located in existing ROWs or areas of existing disturbance.</p>				

2.2.1. Construction and Disturbance

The exhibits submitted with the applications for permit to drill (APDs) depict the location, orientation, and layout of each proposed well pad. Site-specific conditions may require slight deviations from exhibits filed with the APD; however, QEP would not exceed the amount of surface disturbance described in the APDs and analyzed in this EA. The construction of project components under the Proposed Action would result in an estimated 64 acres of surface disturbance as described in Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9).

2.2.2. Access Roads

The proposed expansion of three well pads and construction of gas and liquids pipelines would not require the construction of new access roads. Existing county and local improved/unimproved access roads (two-tracks) would provide access to the proposed well pad expansions. However, QEP would re-reroute 1,033-feet of an existing county road on the south side of well pad RW 22-22B (Figure 2.1, “General Location and Proposed Action” (p. 8)). The access road re-route would be constructed within a 30-foot wide temporary construction corridor and the permanent running surface of the access road re-route would be 18-feet wide. All traffic would be confined to the approved 18-foot permanent running surface. Surface disturbance and vehicular traffic would be limited to the approved location and access route.

QEP would gravel or cap the roadbed as necessary to provide a well-constructed and safe road. Should conditions warrant, QEP would install rock, gravel, or culverts along the proposed road re-route. Based on the onsite visits, there are no proposed culverts associated with the proposed road re-route. Where applicable, QEP would obtain county road crossing or encroachment permits prior to construction. In accordance with Onshore Order #1, QEP would, using Best Management Practices (BMPs), improve or maintain existing roads to a condition that is the same as or better than before operations began.

QEP would maintain roads until final abandonment and reclamation of well pads and/or other facilities is complete. QEP would maintain the road surface and shoulders in a safe and usable condition and roads would be maintained in accordance with the original construction standards. Road maintenance would include, but not be limited to, blading, ditching, culvert installation and cleanout, gravel surfacing (where excessive rutting or erosion may occur) and dust control, as necessary to ensure safe operating conditions. QEP would conduct snow removal on roads on an as-needed basis to accommodate safe travel. When snow is removed from the road during the winter months, the snow would be pushed outside of the borrow ditches, and the turnouts kept clear so that snowmelt would be channeled away from the road.

QEP would employ construction BMPs and the Conditions of Approval (Applicant-committed resource protection measures) listed in the GDBR Final EIS (BLM 2008a) and ROD (BLM 2008c) to control onsite and off-site erosion.

Disturbed areas along access roads would be kept free of trash during operations. QEP would construct road drainage crossings consistent with the typical dry creek drainage crossing type and consistent with road construction practices in the BLM Vernal Approved RMP and ROD (BLM 2008c). The crossing design would control excess siltation, accumulation of debris and blockage in any drainages.

2.2.3. Well Pad Construction

Well pad construction would start with vegetation clearing and topsoil stripping to a depth determined by the BLM. Based on the onsite forms (BLM 2014), QEP would save six-inches of topsoil for subsequent reclamation. QEP would stockpile excess soil in an area adjacent to the proposed well pads, which would be saved for future reclamation of the well pad. Construction materials for the well pads would include native sand/soil/rock materials present in the area. QEP would use standard cut-and-fill techniques using a bulldozer, grader, front-end loader, or backhoe to level the well pads. Refer to Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9) and Figure 2.1, “General Location and Proposed Action” (p. 8) for a summary of the proposed well pad expansions and associated surface disturbance.

2.2.4. Power Lines

As part of the Proposed Action, QEP is proposing two 13,800-kilovolt power lines to support electrification of the well sites to reduce emissions and increase reliability and safety of well pad activities. Access for construction and maintenance of the proposed power lines would be from existing highways and roads.

The Proposed Action includes a power line re-routes for well pad 42-28B and a new power line for well pad 22-22B. The RW 42-28B power line re-route would run along the western side of the expanded well pad (1,295 feet) (Figure 2.1, “General Location and Proposed Action” (p. 8)). The RW 22-22B power line would run from the east corner of the well pad to a tie-in point for an existing power line (539 feet) (Figure 2.1, “General Location and Proposed Action” (p. 8)). QEP would install the power lines within a 50-foot wide temporary construction corridor and power lines would be maintained within a 15-foot wide permanent corridor. QEP would install power lines above ground on treated wood poles at a spacing of approximately 300 feet between poles. Installation of the poles would including drilling a hole to a depth of approximately six feet using a conventional digger truck with an 18-inch auger. QEP would own and operate the power lines.

All proposed power line re-routes would be located on proposed well pad locations or within right-of-ways (ROWS) and corridors for existing roads or proposed power lines. As a result, the proposed power lines would not result in any additional surface disturbance.

2.2.5. Pipelines

Table 2.2, “Description of Proposed Pipelines” (p. 13) below identifies the proposed pipelines and their lengths, by well pad. All buried pipelines would be constructed within a 50-foot wide temporary construction corridor and maintained within a 30-foot wide permanent corridor. All surface disturbance associated with construction of the buried pipelines would be confined to the 50-foot wide construction corridor.

Table 2.2. Description of Proposed Pipelines

Type of Pipeline	RW 22-22B Well Pad Expansion Length of Proposed Pipelines (feet)	RW 42-26B Well Pad Expansion Length of Proposed Pipelines (feet)	RW 42-28B Well Pad Expansion Length of Proposed Pipelines (feet)
Buried Gas Gathering Pipeline 16-inch or Smaller Steel Pipeline	4,004 ¹	4,095	1,965
Buried Liquids Gathering Pipeline 8-inch or Smaller Flex Steel Pipeline	4,004 ¹	5,713	5,085
Surface Gas Sales Pipeline 3-inches Poly Gas Pipeline	3,441	2,808	1,965
Surface Water Distribution Pipeline 10-inches or Smaller Poly Water Pipeline	4,086 ²	4,086 ²	7,518
Source: QEP 2014			
Note: Refer to Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9) for a description of surface disturbance associated with the proposed pipelines. There may be slight differences in total pipeline lengths compared to Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9) due to rounding, GIS clipping, overlapping pipelines, and other factors.			
¹ These pipelines would be installed in the same trench.			
² These pipelines would be located in the same surface corridor.			

Construction of surface pipelines would consist of laying the pipe, welding segments, and testing. Installation of the surface pipelines would not require clearing or blading of vegetation.

Construction of buried pipelines would proceed in a planned sequence of operations. QEP would clear heavy brush along the pipeline routes by blading, where necessary, and leaving brush in place where possible. QEP would mechanically excavate the buried pipeline trench to a depth of approximately four to five feet. QEP would then weld pipeline segments together and test the welds, lower the pipelines into the trench, and cover the pipelines with excavated material. QEP would test each pipeline with pressurized fresh water (hydrostatic testing) to identify and locate any leaks. QEP would collect and dispose of testing water at approved water injection facilities. Construction of pipelines would generally require a backhoe, welding truck, hydrostatic testing equipment, and light vehicles for transportation of workers.

Pipeline Road Crossings

All pipe and fittings used for road crossings would be prefabricated within the proposed pipeline route to minimize the duration of open pipe trench across the roadway. Pipe used for road crossings would be isolated on each end with a flange set and insulation kit and cathodically protected with a magnesium type anode. QEP would use adequately sized equipment for minor and major road crossings. Depth of cover for minor roads would be greater than four inches and the depth of cover for major roads would be greater than six inches.

Upon lowering the pipe in the trench, six inches of bedding and a minimum of six inches of shading would be installed to protect the pipe using either native soils less than one inch in diameter or imported sand. Pipe trenches that extend across gravel roads would be backfilled with native soils to within eight inches of the driving surface and capped with three-quarter inch road

base. Pipe trenches that extend across asphalt-paved roads would be backfilled to within four inches of the driving surface with three-quarter inch road base and capped with asphalt material.

2.2.6. Drilling and Completion Operations

QEP would conduct drilling operations in compliance with all Federal Oil and Gas Onshore Orders, all State of Utah Division of Oil, Gas, and Mining rules and regulations, and all applicable local rules and regulations.

The drilling operation would generally be conducted in two phases: The first phase would utilize a small drilling rig (similar in type to a water well drilling rig) to drill to a depth of approximately 600 to 1,000 feet. The surface hole would be cased with steel casing and cemented in place entirely from about 600 to 1,000 feet up to the surface. The BLM would be notified in advance of running surface casing and cement in order to witness these operations, if so desired. This part of the drilling operation would normally take two to three days to complete. Drillers would install a Blow Out Preventer (BOP) on the surface casing and test it and the surface casing for pressure integrity prior to the second phase of drilling. The BOP and related equipment would meet the minimum requirements of Onshore Oil and Gas Order No. 2, and the BLM would be notified in advance of all pressure tests in order to witness these tests if so desired. During the second phase, a larger drilling rig would drill the remainder of the hole to a depth of approximately 10,000 to 12,000 feet.

Drillers would run and cement steel production casing in place from surface to approximately 5,000 to 7,000 feet, in accordance with the well design, the drilling program included in the APDs, and in accordance with applicable Applicant-committed resource protection measures. QEP would re-test the BOP equipment prior to drilling the final section of the well below this intermediate casing point. Upon drilling the hole to the total depth, a series of logging tools would be run in the well to evaluate the potential hydrocarbon resource. If the evaluation concludes that adequate hydrocarbon resources are present and recoverable, then steel production casing would be run to total depth and cemented in place in accordance with the well design, the drilling program included in the APDs, and in accordance with applicable Applicant-committed resource protection measures. The casing and cementing program were designed to isolate and protect the various formations encountered in the wellbore and to prohibit pressure communication or fluid migration between zones.

Once production casing has been cemented in place, the drilling rig would be removed and a completion rig would be moved in. The well completion would consist of running a cement bond log to evaluate the cementing integrity and to correlate (on depth) the cased hole logs to the open hole logs, perforating the casing across the hydrocarbon producing zones, and then a stimulation treatment of the formation to enhance its transmissibility of oil and gas. The typical stimulation in the area is a hydraulic fracture treatment of the reservoir, where a slurry of sand suspended in a viscous fluid (gelled water) is pumped into the producing formation with sufficient hydraulic horsepower to fracture the rock formation. The sand serves as a proppant to keep the created fracture open, thereby allowing reservoir fluids to move more readily into the well.

As indicated in the well site layouts included in the APDs, QEP would excavate reserve pits at the three proposed well pad locations. The primary purpose of the reserve pits would be to receive the drill cuttings from the wellbore (mainly shale, sand, and miscellaneous rock minerals). A secondary purpose of the reserve pits would be to contain drilling fluids carried over with the cuttings, and fluids that are periodically discharged from the rig's steel tanks (usually to flush

out cuttings that have settled in the tanks). The reserve pit would not contain any hazardous substances.

QEP would construct the reserve pits on the well pad locations and the pits would not be located within natural drainages where a flood hazard exists or surface runoff could destroy or damage the pit walls. QEP would construct the reserve pit so that it would not leak, break, or allow discharge of liquids and the pits would be lined with a synthetic reinforced 30-millimeter liner and a felt liner if bedrock is encountered. The liner would overlap the pit walls and be covered with dirt and/or rocks to hold the liner in place. QEP would post warning signs and construct fences around reserve pits as directed by the AO and required by regulations to prevent unauthorized access and to alert staff and public land users to potential hazards in the area.

QEP would fence any open pits during operations according to the following minimum standards. The reserve pits would be fenced and maintained until they are backfilled.

- The net wire would be no more than two inches above the ground.
- Total height of the fence would be at least 42 inches.
- Corner posts would be cemented and/or braced in such a manner as to keep the fence tight at all times.
- Standard steel, wood, or pipe posts would be used between the corner braces; the maximum distance between any two fence posts would be no greater than 16 feet.
- All wire would be stretched using a stretching device before it is attached to corner posts.
- Reserve pits would be netted to deter entry by birds, and deny access to wildlife.

Upon termination of drilling and completion operations, the liquid contents of the reserve pit would be used at the next drill site or would be removed and disposed of at an approved waste disposal facility within six months after drilling is terminated. Upon well completion, any hydrocarbons in the pit would be removed in accordance with 43 CFR 3162.7-1.

2.2.7. Production

If the wells prove productive, QEP would install production facilities on the permanent portions of the well pad locations and would install the pipelines as described in Section 2.2.5 (*Pipelines*). QEP would construct containment dikes completely around production facilities that contain fluids (i.e., production tanks, produced water tanks). QEP would construct these dikes using steel and road base to hold 110 percent of the capacity of the largest tank and they would be independent of the back cut. QEP would not use topsoil for the construction of these dikes. QEP would place all loading lines inside the berm surrounding the tank batteries. All permanent (on site six months or longer) above the ground structures constructed or installed, including pumping units, would be painted covert green.

QEP would complete gas wells as flowing wells through a separator where the water and condensate would be captured in separate tanks. QEP would transport produced water and condensate by truck from well pad locations to sales points or disposal locations. The gas stream would be connected to the existing pipeline gathering system, which would be expanded to handle production from proposed new gas wells, as described in Section 2.2.5 (*Pipelines*). QEP

would place most gas wells on a plunger lift system to lift these liquids as the pressure associated with the gas stream diminishes with depletion.

2.2.8. Produced Water Disposal

Where necessary, and if conditions allow (i.e., freeboard, etc.), produced liquids (e.g., produced water) from newly completed wells may be temporarily disposed of into pits for a period not to exceed 90 days as per Onshore Order #7. After the 90 days, any produced water from the proposed wells would be contained in a water tank and would then be hauled by truck to one of the following pre-approved disposal sites:

- Red Wash Disposal well located in SESE, Section 28, Township 7 South, Range 23 East.
- West End Disposal located in NESE, Section 28, Township 7 South, Range 22 East.
- NBE 12 SWD-10-9-23 located in the NWSW, Section 10, Township 9 South, Range 23 East.

QEP would not apply produced water, oil, and other byproducts to roads or well pads for the control of dust or weeds. QEP would not dump produced fluids on roads, well sites, or other areas.

2.2.9. Water Supply

QEP would obtain fresh water for drilling and completion operations from Wonsits Valley Water Right No. 49-251 (filed May 7, 1964) or Red Wash Water Right No. 49-2153 (filed March 25, 1960). QEP would haul water to well pad locations using existing roads and the proposed access road re-route as described in Section 2.2.2 (*Access Roads*). In accordance with Instruction Memorandum FWS/R6 FR-ES 2006, *Programmatic Water Depletion Biological Opinion for Oil and Gas Development Administered or Permitted by the Bureau of Land Management* (USFWS 2006) and the USFWS Section 7 Agreement from 1993 (USFWS 1993), these water rights were issued prior to January 1988 and are considered historic depletions; therefore, QEP will not be required to pay a depletion fee to the Recovery Program. Also, consultation for water depletions was completed under the GDBR Final EIS (BLM 2008a). Water use per well is estimated at 2.58 acre-feet, resulting in a total estimated water use of 162.5 acre-feet for the Proposed Action (Davis 2014).

2.2.10. Waste Disposal

QEP would handle all wastes subject to regulation in compliance with applicable laws to minimize the potential for leaks or spills to the environment.

All refuse (i.e., trash and other solid waste including cans, paper, cable, etc.) generated during construction, drilling, completion, and well testing activities would be contained in a portable, self-contained, fully-enclosed trash cage during operations. QEP would not burn trash on location. All debris and other waste material not contained in the trash cage would be cleaned up and removed from the location immediately after removal of the drilling rig. QEP would haul all trash and waste material by truck to the Uintah County Landfill.

QEP would provide portable, self-contained chemical porta-toilets for human waste disposal. Upon completion of operations, or as needed, QEP would pump the toilet holding tanks and haul

the contents to Ashley Valley Sewer and Water System for disposal. QEP would observe all applicable regulations pertaining to disposal of human and solid wastes.

2.2.11. Hazardous Materials

No chemicals subject to reporting under Superfund Amendments and Reauthorizations Act (SARA) Title III (hazardous materials) in an amount greater than 10,000 pounds would be used, produced, stored, transported, or disposed of annually in association with the drilling, testing, or completing of wells. Furthermore, extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, would not be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completing of the proposed wells. QEP's Vernal, Utah Field Office maintains a file containing current Material Safety Data Sheets for all chemicals, compounds, and/or other potentially hazardous substances that would be used during construction, drilling, completion, production and gas gathering operations in the GDBR.

QEP would develop drilling and operational plans that cover potential emergencies including fire, employee injuries, chemical releases, and spill prevention. QEP and its contractors would comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated governing the location, handling and storage of hazardous substances. QEP and its contractors would locate, handle, and store hazardous substances in an appropriate manner that prevents them from contaminating soil and water resources or otherwise sensitive environments. Any release of hazardous substances (leaks, spills, etc.) in excess of the reportable quantity as established by 40 CFR, Part 117, would be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended. If the release of a hazardous substance in a reportable quantity would occur, QEP would provide a copy of a report to the BLM's AO and all other appropriate Federal and State agencies.

QEP has evaluated its overall field operations within the GDBR and has prepared and implemented Spill Prevention, Control and Countermeasure Plans. The plans include accidental discharge reporting procedures, spill response and cleanup measures, and maintenance of dikes, and copies are kept at QEP's Vernal, Utah field office as well as the Denver, Colorado office. A Hazardous Communication Program also is kept at QEP's Vernal field office, and SARA Title III (community right to know) information is submitted yearly as required and copies are kept in QEP's Denver office, as well as in QEP's Vernal office.

2.2.12. Invasive Plants/Noxious Weeds

QEP will be responsible for noxious and invasive weed control from all project activities for the life of the project. If use of herbicides is deemed necessary, a Pesticide Use Proposal would be submitted for approval to the BLM. QEP would only use herbicides in the season or growth stage during which they are most effective. Herbicides would be applied only by certified personnel using approved precautionary and application procedures in compliance with all applicable federal, state, and local regulations. QEP would not use herbicides within 100 feet of open water or during extremely windy conditions. Aerial application of herbicides would be prohibited within 0.25 mile of known special status plant species locations and hand application of herbicides would not occur within 500 feet of such occurrences. QEP would use certified weed-free seed mixtures and mulches minimizing the potential for noxious weed introduction. Where feasible, QEP would consider mowing as an alternative to herbicide applications. QEP would conduct mowing prior to seed head establishment or bloom.

QEP would implement a weed control program for all existing and proposed access roads, pipeline ROWs, and well pads. Weed control would include annual treatments that are monitored and continued until desirable vegetation out-competes invasive or noxious weeds.

For additional information on management of invasive plants and noxious weeds, refer to QEPs Reclamation Plan for the Uinta Basin (QEP 2009).

2.2.13. Reclamation

Measures Common to Interim and Final Reclamation

QEP would undertake surface reclamation in two phases: interim and final reclamation. QEP would conduct interim reclamation following well completion. QEP would conduct interim reclamation on all disturbed areas no longer required for safe production operations. QEP would conduct final reclamation following completion of well plugging and the facility abandonment processes. As per Onshore Order No. 1, Section XII.B., QEP would complete earthwork for interim and final reclamation within six months of well completion or well plugging (weather permitting).

QEP would re-contour areas to be reclaimed to a natural appearance. Fill and stockpiled spoils no longer necessary to the operation would be spread on the cut slopes and covered with stockpiled topsoil. Where possible, QEP would leave the land surface “rough” after re-contouring to ensure that the maximum surface area would be available to support the reestablishment of vegetative cover.

QEP would rip compacted areas such as roads and well pads in a crosshatch pattern to a depth of 18 to 24 inches to improve soil aeration, water infiltration, and root penetration. Ripped areas would be disced, if necessary, to fill in deep furrows (where topsoil would be lost) and break up large clods (to which topsoil will not adhere). QEP would typically use motor graders, front-end loaders, dozers or tractors equipped with ripping shanks for ripping. Ripper shanks would be set approximately one to two feet apart. QEP would typically accomplish discing using a tractor-drawn disc set two to six inches deep. After compaction relief (ripping and discing) all of the topsoil would be redistributed on the reclaimed area to a pre-disturbance depth.

QEP would generally re-seed during the fall between August 15 and when the ground freezes. If fall seeding is not feasible and erosion control is needed, QEP may seed between spring thaw and May 15. QEP would seed reclaimed areas with seed mixtures that promote re-establishment of pre-disturbance plant communities. Seed mixes would be selected from a list provided or approved by the BLM, or a specific seed mix would be proposed by QEP to the BLM and used after its approval. All seed would be certified weed-free. QEP would drill seed on the contour to an appropriate depth. When drill-seeding is not practical due to steep slopes or rocky surfaces, seeding rates would be doubled, seed would be broadcast, and the area would be raked, “walked” with tracked equipment, or dragged with a chain or harrow to cover seed.

Dry mulch may be considered as one method to enhance the reestablishment of desired plant communities. Where mulching is deemed appropriate, the reclaimed area would be uniformly mulched with certified weed-free grass, hay, small grain straw, or wood fiber at a rate of one to two tons/acre. Alternatively, QEP may apply cotton, jute, or synthetic netting. Mulch would be crimped or disced into the soil, tackified, or incorporated into erosion control blankets to prevent it from blowing or washing away and from entering waterways.

Alternative mulching techniques may be considered on steep slopes where it is unsafe to operate equipment, at sites where soils have 35 percent or more surface rock content, or on notably unstable areas. Alternative techniques may include hydromulch, biodegradable erosion control netting, or matting.

QEP would conduct reclamation assessments, monitoring, and reporting in accordance with the Green River District Reclamation Guidelines (BLM 2011a) and QEP's Reclamation Plan for the Uinta Basin (QEP 2009). QEP would submit annual reclamation evaluation reports to the BLM Vernal Field Office by March 31 of each year.

Interim Reclamation

Interim reclamation includes measures that would stabilize soils and control erosion until final reclamation techniques are applied. QEP would salvage the top six inches of topsoil from all disturbance areas and would stockpile the topsoil separately from subsoil materials. QEP would stockpile topsoil salvaged from the reserve pit separately near the reserve pits.

Topsoil stockpiles would be adequately protected until the topsoil is reapplied on the surface during reclamation. Temporary erosion control measures such as temporary vegetation cover, application of mulch, netting, or soil stabilizers may be used to minimize wind and water erosion and sedimentation prior to vegetation establishment.

After QEP has completed a well and put it into production, the reserve pit would be evaporated. Depending on the time of year and precipitation accumulations, the reserve pit may evaporate naturally. If the reserve pit does not evaporate naturally within one summer season (i.e., June through August) after drilling is completed, alternative evaporation techniques may be applied. Some alternative techniques may include trickle systems, evaporation misters and aerators, evaporation ponds, pit solidification, or water hauling.

Once the reserve pit is as dry as possible, QEP would remove all debris in the pit. Excess pit liner would be cut off and removed and the remaining liner would be torn and perforated while backfilling the pit. QEP would bury the reserve pit liner to a minimum of four feet deep. The reserve pit would be backfilled, recontoured to blend with the natural landscape, and crowned convexly to allow for settling and to prevent standing water. QEP would reclaim and revegetate any areas not needed for production operations in accordance with the common reclamation measures listed above.

Final Reclamation

As soon as practical after the conclusion of drilling and testing operations, QEP would plug and abandon unproductive drill holes. QEP would cap the well casing with a metal plate a minimum of 0.25 inches thick. QEP would weld the cap in place and the well location and identity would be permanently inscribed on the cap as required in 43 CFR 3162.6(d). The depth of the permanent cap would be a minimum of three feet deep from the surface.

Following well plugging, QEP would utilize the common reclamation measures described above for final reclamation. QEP would remove all wellhead equipment and facilities from the well pad. QEP would remove water control structures (e.g., culverts, drainage pipes) not needed to facilitate successful reclamation. Access roads to be reclaimed would be ripped, re-contoured to approximately the original contour of the ground, and seeded in accordance with BLM seeding specifications.

When reclamation is deemed successful by QEP and the BLM, QEP would submit a Final Abandonment Notice (FAN) to the BLM and when approved, would request a bond release.

2.2.14. Applicant-Committed Environmental Protection Measures

QEP adopted resource protection measures from Attachment 1 of the GDBR ROD (BLM 2008c), from the Vernal Field Office Resource Management Plan (BLM 2008b), and from input received during onsite visits (BLM 2014). Table 2.3, “Applicant-Committed Resource Protection Measures” (p. 21) identifies applicant-committed resource protection measures that are specific to proposed development in the Project Area, and that may become applicant-committed resource protection measures in the Decision Record for the Proposed Action.

Table 2.3. Applicant-Committed Resource Protection Measures

Well Pad/Area	Resource Protection Measures
Erosion Control	<ul style="list-style-type: none"> • If a new road is needed to replace an existing road (realignment), QEP would reclaim and revegetate the existing road (BLM 2008c). • QEP would construct well pads and facility sites to prevent overland flow of water from entering or leaving sites through the use of berms, terraces, and grading depressions (BLM 2008b). • Diversion ditches constructed to reroute drainages around well pads would be designed to divert the water back to the original channel. If the water cannot be diverted back to the original channel, then the water would be diverted to the nearest channel with energy dissipating devices installed to prevent channel degradation (BLM 2008c). • Planned access roads and surface-disturbing activities would conform to standards outlined in the BLM and Forest Service publication: Surface Operating Standards for Oil and Gas Development, Gold Book 4th Edition (USDI and USDA 2007) (BLM 2008c).
Vegetation	<ul style="list-style-type: none"> • QEP would monitor and control noxious and invasive weeds along access road use authorizations, pipeline route authorizations, well sites, or other applicable facilities by spraying or mechanical removal. On BLM-administered land, a Pesticide Use Proposal would be submitted and approved prior to the application of herbicides, pesticides, or other hazardous chemicals (BLM 2008c). • QEP will work with the AO to monitor the success of interim and final reclamation. QEP and the AO will perform regular inspections on chosen sites reclaimed two years prior. The two-year gap will allow the seed to become established and give the vegetation two full growing seasons for a better measure of success. If QEP and the AO determine the reclamation has not been successful, QEP will reseed the location (BLM 2008c). • Power washing of all construction and drilling equipment would occur prior to the equipment entering the Project Area from outside the Vernal Field Office area (BLM 2008b).
Wildlife – General	<ul style="list-style-type: none"> • Reserve pits would be fenced and equipped (netted) to deter entry by birds, and deny access to wildlife. Drilling fluids would be immediately removed after well completion. After drilling and completion operations, any visible or measurable layer of oil will be removed from the surface of the reserve pit and the pit will be kept free of oil (BLM 2014). • QEP has committed to construct a containment dike completely around those production facilities which contain fluids (i.e. production tanks, produced water tanks). These dikes would be constructed of compacted impervious subsoil, hold 110% of the capacity of the largest tank, and be independent of the back cut (BLM 2008b).

Well Pad/Area	Resource Protection Measures
Wildlife – Raptors	<ul style="list-style-type: none"> • No construction and development activities would occur with 0.25 mile of burrowing owl nests between March 1 and August 31 (BLM 2008b) at well pad RW 42–26B. • No construction and development activities would occur with 0.5 miles of Ferruginous hawk nests between March 1 and August 1 (BLM 2008b) at well pad RW22–22B and RW42–28B. • No drilling will occur within 0.5 mile of a Ferruginous hawk nests from March 1 to August 1 and no permanent structures would be located within 0.25 mile, unless topography screens the nests from construction operations (BLM 2008c) at well pad RW22–22B and RW42–28B. • If other raptor nests are identified in the Project Area, the protective buffers and timing limitations from the Approved RMP would apply (BLM 2008b). • Unless otherwise agreed to by the AO in writing, power lines shall be constructed in accordance with the standards outlined in <i>Suggested Practices for Raptor Protection on Power Lines</i>, (APLIC 1996). QEP would construct power lines in accordance with these standards or will assume the burden and expense of proving pole designs not shown in the referenced publication are "raptor safe". A raptor expert acceptable to the AO shall provide such proof (BLM 2008c). • As directed by the AO, QEP would place raptor perch guards on power line poles in areas near sensitive wildlife habitat areas such as sage-grouse leks and prairie dog towns (BLM 2008c). • Artificial nest platforms will be constructed as directed by the AO within the Project Area in order to mitigate any unavoidable losses of potential, natural nesting areas (BLM 2008c).
Cultural Resources	<ul style="list-style-type: none"> • Equipment operators would be informed that if a cultural site is uncovered during construction, activities in the vicinity would immediately cease and the AO would be notified (BLM 2008c).
Paleontological Resources	<ul style="list-style-type: none"> • If paleontological resources were uncovered during ground disturbing activities, QEP would suspend all operation that would further disturb such materials and would immediately contact BLM's AO, who would arrange for a determination of significance and, if necessary, recommend a recovery or avoidance plan (BLM 2008c).

2.3. No Action Alternative

Under the No Action Alternative, the BLM would deny the Proposed Action described in this EA. Currently approved drilling and completion of wells and development of infrastructure would continue as described in approved decision documents. Selection of the No Action Alternative would not preclude other oil and gas activities or proposals within the Project Area. Development of existing well pads, roads, and pipelines in the Project Area has resulted in an estimated 306.1 acres of surface disturbance. Refer to Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9) for additional information on existing surface disturbance in the Project Area.

2.4. Alternatives Considered but Eliminated from further Analysis

The BLM did not identify any alternatives besides the Proposed Action that would meet the purpose and need of this project.

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Chapter 3. Affected Environment

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The BLM ID Team, as documented in the ID Team Checklist (Appendix A) evaluated the Project Area. The checklist indicates which resources of concern are present, which resources would be affected by the alternatives and require analysis in the EA, and which resources are either not present in the Project Area or would not be affected to a degree that requires detailed analysis. The description of the affected environment in this section focuses on those resources identified as “PI” (present with potential for relevant impact that need to be analyzed in detail in the EA) in the ID Team Checklist.

Mineral extraction activities, livestock grazing, and associated surface disturbance have historically affected the Project Area. The 63 proposed new natural gas wells, three well pad expansions, construction of gas and liquid gathering pipelines and associated facilities would occur in the GDBR on BLM-administered lands in the BLM Utah Vernal Field Office. This EA is tiered to the GDBR ROD (BLM 2008c), and incorporates the GDBR Final EIS (BLM 2008a) by reference; as a result, this chapter summarizes and references the affected environment description from the GDBR Final EIS and provides additional site-specific information, where appropriate.

3.1. Air Quality and Greenhouse Gas Emissions

The Project Area is located in the Uinta Basin, a semiarid, mid-continental climate regime typified by dry, windy conditions, limited precipitation, and wide seasonal temperature variations subject to abundant sunshine and rapid nighttime cooling. The Uinta Basin is designated as unclassified/attainment by the Environmental Protection Agency (EPA) under the Clean Air Act. This classification indicates that the concentration of criteria pollutants in the ambient air is below National Ambient Air Quality Standards (NAAQS), or that adequate air monitoring is not available to determine attainment. Refer to Section 3.3 (pages 3-25 through 3-28) in the GDBR Final EIS (BLM 2008a) for additional information on climate in the region.

NAAQS are standards that have been set for the purpose of protecting human health and welfare with an adequate margin of safety. Pollutants for which standards have been set include ground level ozone, (O₃), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO), and particulate matter less than 10 microns in diameter (PM₁₀) or 2.5 microns in diameter (PM_{2.5}). Airborne particulate matter consists of tiny coarse-mode (PM₁₀) or fine-mode (PM_{2.5}) particles or aerosols combined with dust, dirt, smoke, and liquid droplets. PM_{2.5} is primarily derived from the incomplete combustion of fuel sources and secondarily formed aerosols, whereas PM₁₀ is primarily derived from crushing, grinding, or abrasion of surfaces. Table 3.1, “Ambient Air Quality Background Values” (p. 27) lists ambient air quality background values for the Uinta Basin and NAAQS standards.

Table 3.1. Ambient Air Quality Background Values

Pollutant	Averaging Period(s)	Uinta Basin Background Concentration (µg/m ³)	NAAQS (µg/m ³) ⁷
SO ₂	Annual	0.8 ²	-- ¹
	24-hour	3.9 ²	-- ¹
	3-hour	10.1 ²	1,300

Pollutant	Averaging Period(s)	Uinta Basin Background Concentration ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$) ⁷
	1-hour	19.0 ²	197
NO ₂	Annual	8.1 ³	100
	1-hour	60.2 ³	188
PM ₁₀	Annual	7.0 ⁴	-- ⁶
	24-hour	16.0 ⁴	150
PM _{2.5}	Annual	9.4 ³	15
	24-hour	17.8 ³	35
CO	8-hour	3,450 ⁴	10,000
CO	1-hour	6,325 ⁴	40,000
O ₃	8-hour	100.0 ^{3,5}	75

Existing point and area sources of air pollution within the Uinta Basin include the following:

- Exhaust emissions (primarily CO, nitrogen oxides [NO_x], PM_{2.5}, and hazardous air pollutants [HAPs]) from existing natural gas fired compressor engines used in transportation of natural gas in pipelines.
- Natural gas dehydrator still-vent emissions of CO, NO_x, PM_{2.5}, and HAPs.
- Gasoline and diesel-fueled vehicle tailpipe emissions of volatile organic compounds (VOCs), NO_x, CO, SO₂, PM₁₀, and PM_{2.5}.
- Sulfur oxides (SO_x), NO_x, fugitive dust emissions from coal-fired power plants, and coal mining/ processing.
- Fugitive dust (in the form of PM₁₀ and PM_{2.5}) from vehicle traffic on unpaved roads, wind erosion in areas of soil disturbance, and road sanding during winter months.
- Long-range transport of pollutants from distant sources.

The EPA established two year-round air quality monitoring sites in summer 2009 near Red Wash (southeast of Vernal, Utah) and Ouray (southwest of Vernal). The EPA certified these monitors as Federal Reference Monitors in the fall of 2011. These monitors can be used to make NAAQS compliance determinations. The complete EPA Ouray and Red Wash monitoring data can be found at <http://www.epa.gov/airdata/>.

Both monitoring sites have recorded numerous exceedances of the eight-hour ozone standard during the winter months (January through March 2010, 2011, and 2013). High concentrations of ozone may form under a “cold pool” process. This process occurs when stagnant air conditions form with very low mixing heights under clear skies, with snow-covered ground and abundant sunlight. These conditions, combined with area precursor emissions (NO_x and VOCs), can create intense episodes of ozone. The high ozone numbers did not occur during January through March of 2012 due to a lack of snow cover. This phenomenon has also been observed in similar locations in Wyoming. Winter ozone formation is a newly recognized issue, and the methods of analyzing and managing this problem are still being developed. Existing photochemical models are currently unable to replicate winter ozone formation reliably. This is due to the very low mixing heights

associated with the unique meteorology of the ambient conditions. Further research is needed to definitively identify ozone precursor sources that contribute to observed ozone concentrations.

The Utah Department of Air Quality (UDAQ) conducted limited monitoring of PM_{2.5} in Vernal, Utah, in December 2006. During the 2006-2007 winter season, PM_{2.5} levels were higher than the PM_{2.5} health standards that became effective in December 2006. The PM_{2.5} levels recorded in Vernal were similar to other areas in northern Utah that experience wintertime inversions. The most likely causes of elevated PM_{2.5} at the Vernal monitoring station are those common to other areas of the western U.S. (combustion and dust) plus nitrates and organics from oil and gas activities in the Basin. PM_{2.5} monitoring that has been conducted in the vicinity of oil and gas operations in the Uinta Basin by the Red Wash and Ouray monitors beginning in summer 2009 have not recorded any exceedances of either the 24-hour or annual NAAQS.

HAPs are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, benzene, toluene, ethylbenzene, isomers of xylene (BTEX) compounds, and normal-hexane (n-hexane). There are no applicable federal or state ambient air quality standards for assessing potential HAP impacts to human health. Refer to Section 3.3 (pages 3-29 through 3-34) in the GDBR Final EIS (BLM 2008a) for additional information on air quality conditions relevant to the Project Area.

Greenhouse Gases

Greenhouse gases keep the planet's surface warmer than it otherwise would be. However, as concentrations of these gases increase, the Earth's temperature is climbing above past levels. According to National Oceanic and Atmospheric Administration (NOAA) and National Aeronautics and Space Administration (NASA) data, the Earth's average surface temperature has increased approximately 1.2 to 1.4 degrees Fahrenheit in the last 100 years. The eight warmest years on record (since 1850) have all occurred since 1998, with the warmest year being 1998. However, according to the British Meteorological Office's Hadley Centre, the United Kingdom's foremost climate change research center, the mean global temperature has been relatively constant for the past nine years after the warming trend from 1950 through 2000 (Brohan et al. 2005). The analysis of the Regional Climate Impacts prepared by the U.S. Global Change Research Program (USGCRP) (2009) suggests that recent warming in the region (including the Project Area) was nationally among the most rapid. Past records and future projections predict an overall increase in regional temperatures, largely in the form of warmer nights and effectively higher average daily minimum temperatures. They conclude that this warming is causing a decline in spring snowpack and reduced flows in the Colorado River. The USGCRP projects a region-wide decrease in precipitation, although with substantial variability in interannual conditions. For eastern Utah, the projections range from an approximate five percent decrease in annual precipitation to decreases as high as 40 percent of annual precipitation. For more information on climate change, refer to the U.S. Global Change Research Program assessments, reports, and data (USGCRP 2014).

3.2. Invasive Plants/Noxious Weeds, Soils, and Vegetation

3.2.1. Vegetation and Invasive Plants/Noxious Weeds

The dominant vegetation classes in the Project Area include Desert Shrub (3,146 acres); Sagebrush (668 acres); and Pinyon Juniper (20 acres) (BLM 2008b). Invasive Annual Grassland comprises approximately 11 acres within the Project Area (USGS 2011). Vegetation in the project vicinity consists predominantly of a mixed desert shrub community dominated by black sagebrush (*Artemisia nova*). Invasive species that could occur in areas proposed for development include cheatgrass (*Bromus tectorum*), halogeton (*Halogeton glomeratus*), and Russian thistle (*Salsola kali*). Table 3.2, “Plant Species Observed in the Project Area” (p. 30) identifies common plant species and invasive plant species that have the potential to occur in the Project Area.

Table 3.2. Plant Species Observed in the Project Area

Scientific Name	Common Name
Shrubs	
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	Wyoming big sagebrush
<i>Atriplex confertifolia</i>	Shadscale
<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush
<i>Juniperus scopulorum</i>	Rocky Mountain juniper
Grasses and Forbs	
<i>Achnatherum hymenoides</i>	Indian ricegrass
<i>Agropyron cristatum</i>	Crested wheatgrass
<i>Hesperostipa comata</i>	Needle and thread
<i>Pleuraphis jamesii</i>	Galleta grass
<i>Sphaeralcea coccinea</i>	Scarlet globemallow
Invasive Species	
<i>Bromus tectorum</i>	Cheatgrass
<i>Halogeton glomeratus</i>	Halogeton
<i>Salsola kali</i>	Russian Thistle
Source: BLM 2014	

Refer to Section 3.5 (pages 3-43 through 3-47) in the GDBR Final EIS (BLM 2008a) for more information on vegetation and invasive/noxious weed species relevant to the Project Area.

3.2.2. Soils

Geologic formations in the Uinta Basin include Tertiary and Cretaceous age sediments, which consist mainly of lacustrine deposits containing clay, silt, and lime. Elevations in the Project Area range from approximately 5,584 to 5,699 feet. Soils in the area consist predominantly of sandy loam. The terrain is rolling hills, and the proposed wells and associated infrastructure would be located primarily on rolling hills (BLM 2014). Refer to Section 3.4 (pages 3-34 through 3-42) in the GDBR Final EIS (BLM 2008a) for more information on soil resources relevant to the Project Area.

3.3. Livestock Grazing and Rangeland Health Standards

The Project Area and proposed development overlaps the Antelope Draw allotment, which is an active sheep grazing allotment with a grazing period from November 16 through April 27

(Figure 3.1, “Livestock Grazing Features” (p. 32)). The allotment is typically used for winter grazing, lambing, and shearing activities. The Antelope Draw allotment has 3,679 active Animal Use Months (AUMs) available for forage. Approximately 268 AUMs are in the Project Area. Within the Project Area there is 306.1 acres of existing disturbance resulting in a projected loss of 18.4 AUMs. The only identified range improvement in the Project Area is the John Glen sheep corral located in Section 21. There are several stock ponds within the Project Area; located in Sections 21, 26, and 28.

Refer to Section 3.11 (pages 3-77 through 3-78) in the GDBR Final EIS (BLM 2008a) for additional information on Rangeland Management in the GDBR.

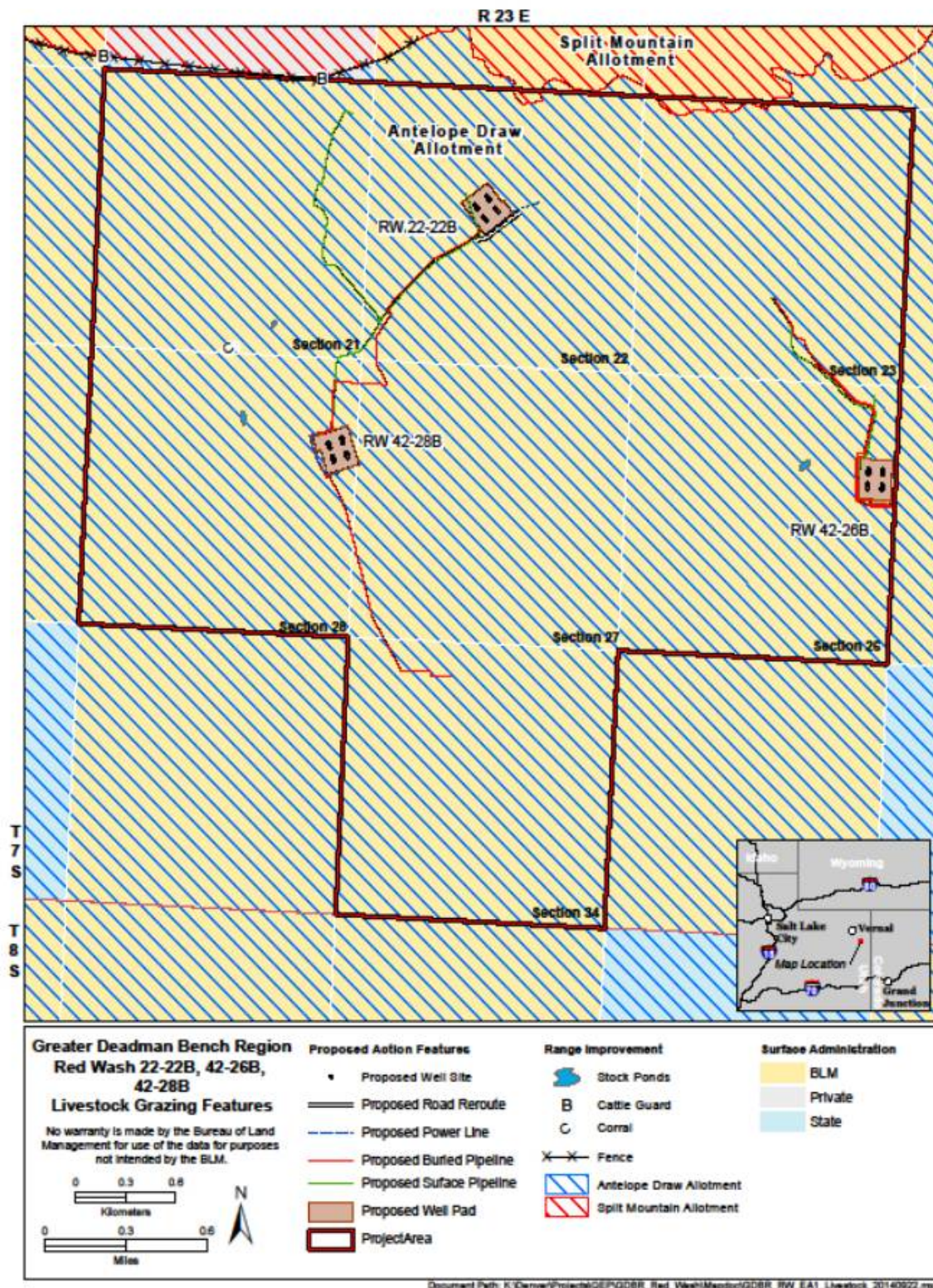


Figure 3.1. Livestock Grazing Features

3.3.1. Rangeland Health Standards

The BLM Utah Rangeland Health Standards address four conditions that must be met in order to achieve the Fundamentals of Rangeland Health. These include 1) soil productivity, 2) riparian/wetland function, 3) desired species composition, and 4) water quality standards. Utah Guidelines for Grazing Management include management practices that can be applied to achieve Utah's standards.

The BLM established six Rangeland Health sites and conducted surveys in 2002 on the Antelope Draw allotment. Results of the survey conducted in T7S, R23E, Section 20, which is the closest location to the Project Area, indicated the following:

- None to slight departure in soil stability.
- Slight to moderate departure in biotic integrity due to invasive species such as cheatgrass, Russian thistle, and halogeton and some decline in cool season productivity along with a decline in Indian rice grass.
- None to slight departure in hydrologic function.

3.4. Wildlife

3.4.1. Non-USFWS Designated Wildlife

Wildlife species and habitats occurring within the Project Area are typical of the Uinta Basin arid and semi-arid desert shrub communities. The dominant vegetation species include shadscale, rabbitbrush, and Wyoming big sagebrush (Table 3.2, "Plant Species Observed in the Project Area" (p. 30)). The desert shrub community is the most variable vegetative community in the GDBR and tends to be sparsely vegetated with shallow soils (BLM 2008a).

Big Game Species

According to the UDWR, pronghorn crucial yearlong habitat and fawning habitat overlaps the entirety of the Project Area (Figure 3.2, "Wildlife Habitat" (p. 34)) (UDWR 2013). Crucial ranges are areas on which a species depends for survival; there are not alternative ranges due to climate conditions or other limiting factors. Mule deer and elk also occur around the Project Area; however, crucial habitat for these species does not overlap the Project Area (UDWR 2013).

Refer to section 3.6 (pages 3-48 through 3-50) in the GDBR Final EIS (BLM 2008a) for additional information about non-USFWS designated fish and wildlife species in the GDBR.

White-tailed Prairie Dog

During the onsite visits prairie dog habitat was identified along the access road to the well pad RW 42-26B. Based on Geographic Information System (GIS) information, delineated prairie dog colonies do not overlap the Project Area. (Figure 3.2, "Wildlife Habitat" (p. 34)) The white-tailed prairie dog (*Cynomys leucurus*) is listed as a species of concern by the UDWR as well as a BLM sensitive species, and has been petitioned to be federally listed as threatened or endangered under the Endangered Species Act (ESA). Colonies of this species occur in mountain valleys, semi-desert grasslands, and open shrublands.

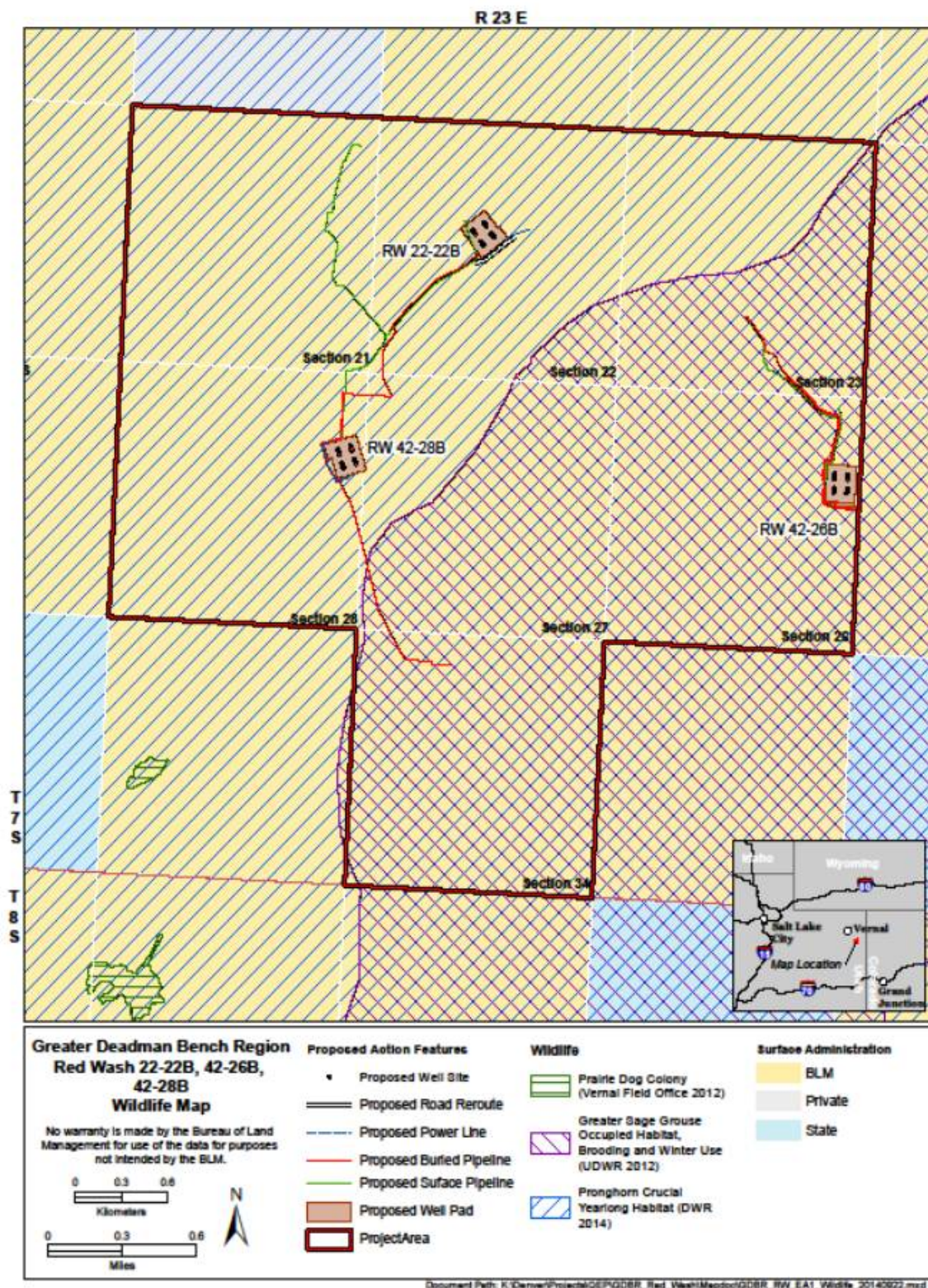


Figure 3.2. Wildlife Habitat

Fish Species and Fisheries

The UDEQ designates the Green River near Ouray and the White River from the Green River confluence to the Colorado state line as warm water fisheries (Utah Administrative Code 2007). Game fish species found in the Green and White rivers include channel catfish (*Ictalurus punctatus*), smallmouth bass (*Micropterus dolomieu*), crappie (*Pomoxis spp.*), bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), black bullhead (*Ameiurus melas*), northern pike (*Esox lucius*), walleye (*Sander vitreus*), carp (*Cyprinus spp.*), and the occasional trout (*Oncorhynchus spp.*) (Bestgen and Irving 2008). However, channel catfish were the most abundant game species identified from previous electrofishing and fyke/trammel net surveys (Bestgen et al. 2007; Irving and Modde 1994). Other game fish species generally occur in relatively low numbers. Native fish species that occur in the Green and White rivers include Colorado pikeminnow (*Ptychochelilus lucius*) (endangered), razorback sucker (*Xyrauchen texanus*) (endangered), bonytail (*Gila elegans*) (endangered), humpback chub (*Gila cypha*) (endangered) (see Section 3.4.3.2), mottled sculpin (*Cottus bairdii*), and speckled dace (*Rhinichthys osculus*) (Bestgen and Irving 2008).

The flannemouth sucker (*Catostomus latipinnis*), roundtail chub (*Gila robusta*) and bluehead sucker (*Catostomus discobolus*) are state sensitive species due to declining population numbers and distribution, and they receive special management under a conservation agreement in order to preclude the need for a federal listing. Special status fish species include those fish species that are BLM sensitive species and State of Utah species of concern. Native fish, such as flannemouth sucker and bluehead sucker, and introduced species such as carp, channel catfish, and red shiner were the most abundant fish species identified during previous surveys (Bestgen et al. 2007; Irving and Modde 1994).

3.4.2. Migratory Birds (including raptors)

The Migratory Bird Treaty Act (MBTA), and Bald and Golden Eagle Protection Act were implemented for the protection of migratory birds and eagles. Unless permitted by regulations, the MBTA makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition to the MBTA, Executive Order 13186 sets forth the responsibilities of federal agencies to further implement the provisions of the MBTA by integrating bird conservation principles and practices into agency activities and by ensuring that federal actions evaluate the effects of actions and agency plans on migratory birds. Pursuant to Executive Order 13186, a Memorandum of Understanding (MOU) (BLM MOU WO-230-2010-04[BLM 2010]) between the BLM and USFWS outlined a collaborative approach to promote the conservation of migratory bird populations and avoid or minimize adverse impacts on migratory birds in coordination with state, tribal, and local governments.

Migratory bird species commonly associated with the desert shrub community within the Project Area include the horned lark (*Eremophila alpestris*), sage sparrow (*Amphispiza belli*), vesper sparrow (*Pooecetes gramineus*), black-throated sparrow (*Amphispiza bilineata*), sage thrasher (*Oreoscoptes montanus*), Brewer's sparrow (*Spizella breweri*), western kingbird (*Tyrannus verticalis*), Say's phoebe (*Sayornis saya*), prairie falcon (*Falco mexicanus*), and Swainson's hawk (*Buteo swainsoni*) (BLM 2008a).

Common raptor species that breed in the region include the golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), Swainson's hawk, red-tailed hawk (*Buteo jamaicensis*), turkey

vulture (*Cathartes aura*), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), northern harrier (*Circus cyaneus*), prairie falcon, American kestrel (*Falco sparverius*), great-horned owl (*Bubo virginianus*), and long-eared owl (*Strix otus*) (BLM 2008a).

Refer to the sections below for additional information on raptor species with identified nests proximate to the Project Area. Refer to Section 3.6.4 (page 3-50 through page 3-55) for raptors and Section 3.6.6 (page 3-59) of the GDBR Final EIS (BLM 2008a) for additional information on other migratory birds and raptors that may inhabit the region.

Ferruginous Hawks (*Buteo regalis*)

The ferruginous hawk is a Utah state threatened raptor and is a common species in western, northeastern, and southeastern Utah. According to Smith and Murphy, as cited in Grindrod (1998), within Utah, ferruginous hawks nests on junipers (*Juniperus spp.*), pinyon pines (*Pinus edulis*), cottonwoods (*Populus spp.*), on the ground, on low hills, cliffs, and on artificial structures. Generally, this species nests where visibility is extensive which may contribute to the species' relatively high sensitivity to human disturbance (Suter and Jones 1981).

Based on available GIS data, there are six ferruginous hawk nests within the Project Area within 0.5 mile of proposed surface disturbing activities (UDWR 2006, BLM 2001). In accordance with the BLM Vernal RMP ROD (BLM 2008b), all raptor nests have an associated protective seasonal and spatial buffer which limit surface-disturbing activities, including activities such as pipelines and construction activities based on species-specific breeding requirements. The seasonal protective buffer for ferruginous hawks limits surface disturbing activities within a 0.5-mile of nest locations between March 1 and August 1. The seasonal protective buffer associated with these nest locations overlaps locations of proposed development including the surface pipeline in Township 7 S, Range 23 E, Section 21; proposed well pad expansions for RW 22-22B and RW 42-28B in Township 7 S, Range 23 E, Sections 22 and 28; and a buried pipeline in Township 7 S, Range 23 E, Section 27. Pre-construction raptor nest surveys may be required to confirm nest occupancy and need for seasonal protection. The BLM can grant a onetime surface disturbance exception with an established buffer area if the raptor nest is determined not to be active.

Refer to Section 3.6.8.6 (page 3-63) of the GDBR Final EIS (BLM 2008a) for additional information on ferruginous hawk.

Burrowing Owl (*Athene cunicularia*)

The burrowing owl is listed as a UDWR Species of Special Concern and BLM sensitive species. In Utah, prairie dog burrows are the most important source of burrowing owl nest sites. Refer to Section 3.4.1 (*White-tailed Prairie Dog*) for a description of white-tailed prairie dog habitat and colonies in and around the Project Area. Burrowing owls prefer open areas within deserts, grasslands, and shrubsteppe. They use well-drained, level to gently sloping areas characterized by sparse vegetation and bare ground.

Burrowing owls are typically found in open grasslands, where abandoned burrows dug by mammals such as ground squirrels (*Spermophilus spp.*), prairie dogs (*Cynomys spp.*) and badgers (*Taxidea taxus*) are available. The burrows may be enlarged or modified, making them more suitable. Suitable habitat for this species is present throughout the Project Area.

During the onsite visits, potential nesting habitat for burrowing owl (*Athene cunicularia*) was observed along the access road to well pad RW 42-26B (Sadler 2014).

Refer to Section 3.6.8.7 (Page 3-63) of the GDBR Final EIS (BLM 2008a) for more information on the burrowing owl.

3.4.3. Threatened, Endangered, Proposed, or Candidate Wildlife Species

An endangered species is a species listed under the ESA as being in danger of extinction throughout all or a portion of its range. A threatened species is a species listed under the ESA as likely to become endangered within the near future throughout all or a portion of its range. A candidate species is a species for which the USFWS has sufficient information on their biological status and threats to proposed them as endangered or threatened under the ESA, but for which development of a proposed regulation is precluded by other higher priority listing activities. Special status species are species that are sensitive species designated by the BLM or the State of Utah.

There is no designated habitat for threatened and endangered species within the Project Area.

Greater Sage-Grouse (*Centrocercus urophasianus*)

The greater sage-grouse is a USFWS candidate species, a wildlife species of concern by the UDWR, and a BLM sensitive species. On March 5, 2010, the USFWS determined that the sage-grouse warrants protection under the ESA; however, the USFWS concluded that proposing the species for protection is precluded by the need to take action on other species facing more immediate and severe extinction threats. Therefore, sage-grouse in Utah continue to be managed by the UDWR, while most of their habitat is located on federal or private lands. The Utah BLM manages resources and resource uses in potential sage-grouse habitat in accordance with the BLM Washington Office Instruction Memorandum (IM) 2012-043 (*Greater Sage-Grouse Interim Management Policies and Procedures*) (BLM 2011b). If the greater sage-grouse becomes listed, Section 9 of the Endangered Species Act would prohibit certain activities that directly or indirectly affect endangered species. Under the ESA and its regulations, it is illegal for any person to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these), any endangered fish or wildlife species and most threatened fish and wildlife species.

In the GDBR, the sage-grouse is primarily found in sagebrush dominated desert shrub community (BLM 2008a). This species occupies different habitat types during the year depending on season, weather, and nutritional requirements. Based on available GIS data there are no known sage-grouse leks within five miles of the Project Area, and no recent observations or records of sage-grouse in the Project Area (UDWR 2013). However, proposed well pad RW 42-26B and associated pipelines would overlap greater sage-grouse brood rearing habitat, occupied habitat, and sage-grouse winter habitat, which is identified as Preliminary Priority Habitat (PPH) in BLM IM 2012-043¹. (Figure 3.2, "Wildlife Habitat" (p. 34)) Refer to Section 3.6.8.8 (pages 3-62 through 3-66) in the GDBR Final EIS (BLM 2008a) for more information on the Greater Sage-Grouse.

Colorado River Fish Species

¹ Per WO IM 2012-043, Preliminary Priority Habitat comprises areas that have been identified as having the highest conservation value to maintaining sustainable Greater Sage-Grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas.

The BLM has identified four endangered fish species that are historically associated with the Upper Colorado River Basin and its tributaries. Federal and state listed species include the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker. These fish have experienced severe population declines due to flow alterations, habitat loss or alteration, and introduction of non-native fish species. Habitats for these fish include backwaters, sloughs, oxbow lakes, and seasonally inundated floodplains and reservoirs (59 FR 13374). The Project Area does not occur within critical habitat for the Colorado River Basin listed fish species, but the Proposed Action would deplete water from the Colorado River Basin. Refer to Section 3.6.9 (pages 3-67 through 3-70) of the GDBR Final EIS (BLM 2008a) for more information on the threatened and endangered Colorado River fish species.

Chapter 4. Environmental Impacts

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The analysis in this chapter is tiered to the GDBR ROD (BLM 2008c), incorporates by reference the analysis in the GDBR Final EIS (BLM 2008a), and provides additional site-specific analysis and information, where appropriate, to inform decision-making on this specific development proposal. Environmental impacts are only discussed for resources identified as “PI” (present with potential for relevant impact that need to be analyzed in detail in the EA) in the ID Team Checklist (Appendix A).

4.1. Proposed Action Environmental Impacts

This section analyzes the impacts of the Proposed Action on the potentially impacted resources described in the affected environment chapter (Chapter 3).

4.1.1. Air Quality and Greenhouse Gas Emissions

This Proposed Action is considered a minor air pollution source under the Clean Air Act and is not controlled by regulatory agencies. At present, control technology is not required by regulatory agencies since the Uinta Basin is designated as unclassified/attainment. The Proposed Action would result in different emission sources associated during the two project phases: well development and well production. Annual estimated emissions from the Proposed Action are summarized in Table 4.1, “Proposed Action First Year Emissions (tons/year)” (p. 42). Refer to Section 4.3 (pages 4-5 through 4-11) in the GDBR Final EIS (BLM 2008a) for more information on potential air quality impacts.

Table 4.1. Proposed Action First Year Emissions (tons/year)

Pollutant	Development ^{1,2}	Production ¹	Total ^{1,3}
NO _x	894.6	85.7	980.3
CO	201.6	71.8	273.4
VOC	157.5	4.4	161.9
SO ₂	56.7	0.6	57.3
PM ₁₀	44.1	1.9	46.0
PM _{2.5}	18.9	6.9	25.8
Benzene	1.9	0.0	1.9
Toluene	1.3	0.0	1.3
Ethylbenzene	1.3	0.0	1.3
Xylene	0.0	0.0	0.0
n-Hexane	3.2	1.3	4.4
Formaldehyde	0.0	0.1	0.1

Source: QEP 2014.

¹Emissions include 63 producing wells and associated operations traffic during the year in which the project is developed.

²Development emissions would likely only occur during the first year while wells and other infrastructure are being developed.

³Total emissions after the first year would be substantially lower following completion of development.

CO Carbon monoxide
NO_x Oxides of Nitrogen
PM_{2.5} Particulate Matter less than 2.5 microns in diameter
PM₁₀ Particulate Matter less than 10 microns in diameter
SO₂ Sulfur dioxide
VOC Volatile Organic Compound

Well development includes NO_x, SO₂, and CO tailpipe emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. Fugitive dust concentrations would occur from vehicle traffic on unpaved roads and from wind erosion where soils are disturbed. Drill rig and fracturing engine operations would result mainly in NO_x and CO emissions, with lesser amounts of SO₂. These emissions would be short-term during the drilling and completion phases.

During well production, continuous NO_x, CO, VOC, and HAP emissions would originate from well pad separators, condensate storage tank vents, and daily tailpipe and fugitive dust emissions from operations traffic. Road dust (PM₁₀ and PM_{2.5}) would also be produced by vehicles servicing the wells.

Under the Proposed Action, emissions of NO_x and VOC, ozone precursors, would be 980.3 tons per year for NO_x, and 161.9 tons per year of VOC (Table 4.1, “Proposed Action First Year Emissions (tons/year)” (p. 42)) during the first year of development. Emissions would be dispersed and/or diluted to the extent where any local ozone impacts from the Proposed Action would be indistinguishable from background conditions.

The primary sources of HAPs would be from oil storage tanks and smaller amounts from other production equipment. Small amounts of HAPs would also be emitted by construction equipment. These emissions are estimated to be minor and would be less than 1 ton per year.

Greenhouse Gases

The assessment of greenhouse gas emissions and climate change remains in its earliest stages of formulation. Applicable EPA rules do not require any controls and have yet to establish any emission limits related to GHG emissions or impacts. The lack of scientific models that predict climate change on a regional or local level prohibits the quantification of potential future impacts of decisions made at the local level, particularly for small-scale projects such as the Proposed Action. Drilling and development activities from the Proposed Action are anticipated to release a negligible amount of greenhouse gases into the local air-shed.

Mitigation Measures for Air Quality and Greenhouse Gas Emissions

This EA tiers to and incorporates the Applicant-committed resource protection measures included in Attachment 1 of the GDBR ROD (BLM 2008b). No additional mitigation measures were identified for air quality during preparation of this EA.

4.1.2. Invasive Plants/Noxious Weeds, Soils, and Vegetation

Vegetation and Invasive Plants/Noxious Weeds

The Proposed Action would disturb approximately 64 acres of BLM-administered land of vegetation, primarily in mixed desert shrub communities. QEP would conduct interim reclamation on all disturbed areas no longer required for safe production operations.

Direct impacts to vegetation are primarily associated with clearing of vegetation during construction and degradation of habitat through soil compaction and loss of topsoil. Indirect impacts to vegetation resources may include the invasion and establishment of introduced, undesirable plant species. The severity of these invasions would depend on the success of reclamation and revegetation and the degree and success of noxious weed control efforts. Refer to

Section 4.5 (page 4-17 through 4-18) of the GDBR Final EIS (BLM 2008a) for more information on potential impacts to vegetation.

Mitigation Measures for Vegetation and Invasive Plants/Noxious Weeds

This EA is tiered to and incorporates the Applicant-committed resource protection measures and mitigation measures included in Attachment 1 of the GDBR ROD (BLM 2008c). Refer to Section 2.2.14 (*Applicant Committed Resource Protection Measures*) of this EA for applicant-committed resource protection measures that are specific to well pads and development in the Project Area. No additional mitigation measures were identified for vegetation during preparation of this EA.

Soils

The Proposed Action would disturb approximately 64 acres of soils, primarily in sandy loam soils.

Potential direct impacts to 64 acres of soils include mixing of soil horizons, soil compaction, short-term loss of topsoil and site productivity, and contamination of soils with petroleum products, loss of soil/topsoil through wind and water erosion, and vegetation loss. Loss of soil/topsoil in disturbed areas would increase competition by annual weed species with native species. Increased erosion could occur due to construction and operation of gas wells and associated facilities; however, soils with faster infiltration rates, higher levels of organic matter, and improved soil structure (such as sandy loam soils) have a greater resistance to erosion. Refer to Section 4.4 (pages 4-12 through 4-17) of the GDBR Final EIS (BLM 2008a) for more information on potential impacts to soils.

To minimize potential impacts to soils, QEP has committed to the Applicant-committed resource protection measures for Soils in the GDBR ROD Attachment 1 (BLM 2008c).

Mitigation Measures for Soils

This EA is tiered to and incorporates the Applicant-committed resource protection measures and mitigation measures included in Attachment 1 of the GDBR ROD (BLM 2008c). Refer to Section 2.2.14 (*Applicant Committed Resource Protection Measures*) of this EA for applicant-committed resource protection measures that are specific to well pads and development in the Project Area. No additional mitigation measures were identified for soils during preparation of this EA.

4.1.3. Livestock Grazing and Rangeland Health Standards

The Proposed Action would result in approximately 64 acres of surface disturbance resulting from construction and development. This equates to approximately 3.8 AUMs¹ that would be at least temporarily unavailable to foraging animals including authorized livestock on the Antelope Draw allotment. The 306.1 acres of existing disturbance in the Project Area has resulted in a projected loss of 18.4 AUMs.

Direct impacts from construction and production activities in the Antelope Draw allotment would include the loss of forage, impacts to lambing areas, potential disruption of lambing periods, and the potential for increased mortality and injuries to livestock resulting from increased vehicle traffic. In addition, livestock could be displaced from preferred grazing areas and range study plots by construction and production activities. The Proposed Action would not result in impacts

¹ The mean number of AUMs per acre of land within the Vernal Field Office is estimated at 0.06 AUMs per acre (BLM 2008d)

to the sheep corral or stock ponds located in the Project Area due to the proximity of these features in relation to proposed development (Figure 3.1, “Livestock Grazing Features” (p. 32)).

Indirect impacts would include the spread of noxious and invasive species, fugitive dust, and fragmentation of allotments. Following surface-disturbance activities, noxious weeds and invasive plant species may readily spread and colonize areas that typically lack or have minimal vegetation cover or areas that have been recently disturbed. The spread of halogeton in disturbed areas could lead to the loss of available native forage and increased livestock mortality as the consumption of halogeton can lead to intoxication and death in sheep and cattle (Torrell et al. 2000).

Even with the implementation of Applicant-committed resource protection measures in the GDBR ROD (BLM 2008c), the Proposed Action may contribute to decreasing the functionality of the allotment. An allotment becomes non-functional when it is no longer able to support grazing. The decision on whether an allotment is no longer functional would be made by the permittee and the BLM during the grazing allotment permit renewal process or any allotment evaluation determined necessary by the BLM. Refer to Section 4.11 (page 4-59 through 4-61) in the GDBR Final EIS (BLM 2008a) for additional information on potential impacts to range resources and the Antelope Draw Allotment.

Rangeland Health Standards and Guidelines

The Proposed Action would result in approximately 64 acres of surface disturbance impacting soils, vegetation, and available forage as described in sections 4.1.2 of this EA. Additional disturbance and associated impacts may further contribute to the Antelope Draw allotment not meeting BLM Utah Rangeland Health Standards by reducing the productivity of soils and the amount and quality of desired vegetation species for foraging animals.

Mitigation Measures for Livestock Grazing and Rangeland Health Standards

This EA is tiered to and incorporates the Applicant-committed resource protection measures and mitigation measures included in Attachment 1 of the GDBR ROD (BLM 2008c). Refer to Section 2.2.14 (*Applicant Committed Resource Protection Measures*) of this EA for Applicant-committed resource protection measures that are specific to well pads and development in the Project Area. The BLM did not identify any additional site-specific mitigation measures during preparation of this EA beyond those listed in Attachment 1 of the GDBR ROD (BLM 2008c).

4.1.4. Wildlife

Non-USFWS Designated Wildlife

Big Game Species

Proposed well pads RW 42-26B, RW 42-28B, RW 22-22B, and associated roads and pipelines in the entirety of the Project Area overlap year-long crucial habitat and fawning habitat for pronghorn. The Proposed Action would result in approximately 64 acres of new surface disturbance in the year-long crucial habitat for pronghorn. Degradation or unavailability of crucial habitat could lead to declines in carrying capacity and/or numbers of pronghorn in the area (BLM 2008a).

Direct impacts to big game species from the Proposed Action would include reduction or degradation of available forage for pronghorn in the year-long crucial habitat and fawning habitat

and increase potential for wildlife-vehicle collisions. Under the Proposed Action, the indirect impact of greatest concern to big game species would be displacement or avoidance resulting from increased human activity, noise from equipment operation, and increased vehicular traffic. Additional indirect effects include noxious weeds and invasive species that reduce habitat quality and increased potential for dust effects from unpaved road traffic. Refer to Section 4.6 (4-28 through 4-31) in the GDBR Final EIS (BLM 2008a) for additional information on potential impacts to big game species.

White-tailed Prairie Dog

Proposed development associated with well pad RW 42-26B and associated surface disturbance of 20.1 acres (Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9)) may affect white-tailed prairie dog habitat, making it less suitable for this species to establish colonies. Due to the scattered distribution of the species, avoidance of all occupied burrows is often impractical. Direct impacts could include loss of habitat until successful reclamation is completed and increased potential for direct mortality of individuals from increased vehicular traffic in and near prairie dog colonies. Indirect impacts would include habitat fragmentation, displacement of individuals, increased noise levels and human presence in the Project Area, and habitat degradation by dispersal of noxious and invasive weed species. Weed invasions may lead to a decrease in the amount of native perennials and bare ground, thereby degrading habitat for prairie dogs by decreasing visibility, forage quality, and suitability for colony establishment.

Fish Species and Fisheries

The Proposed Action would result an estimated 162.5 acre-feet of water depletions from the Upper Colorado River Drainage System for dust abatement, construction, and drilling operations. Water depletions could reduce the ability of the Upper Colorado River Basin to create and maintain the physical habitat (areas inhabited or potentially habitable to fish for use of spawning, development of fish larvae, feeding, or serving as corridors between these areas).

Refer to Section 4.6 (pages 4-27 through 4-50) in the GDBR Final EIS (BLM 2008a) for additional information on potential impacts to non-USFWS designated fish species.

Mitigation Measures for Non-USFWS Designated Wildlife

This EA is tiered to and incorporates the Applicant-committed resource protection measures and mitigation measures included in Attachment 1 of the GDBR ROD (BLM 2008b). Refer to Section 2.2.14 (*Applicant Committed Resource Protection Measures*) of this EA for Applicant-committed resource protection measures that are specific to well pads and development in the Project Area. No additional mitigation measures were identified for non-USFWS designated wildlife species during preparation of this EA.

Migratory Birds (including raptors)

The Proposed Action would result in loss of approximately 64 acres of potential breeding, nesting, and foraging habitat of migratory birds and raptors. Additional impacts could include displacement from suitable habitats due to increased noise levels and visual disturbances on the landscape; reduced habitat values in foraging areas due to prey displacement or weed invasion; potential loss of prey habitat; and an increased potential for collisions with vehicles traveling in the Project Area. Development would also result in indirect impacts such as habitat

fragmentation, habitat degradation by dispersal of noxious and invasive weed species, and dust effects from unpaved road traffic.

If project development and production activities were to occur during the breeding season (April 1 through July 31 for passerine species or January 1 through August 31 for raptor species), then nest or nesting territory abandonment or loss of eggs or young could occur. However, the degree of these potential impacts would depend on a number of variables including the location of the nest site, species relative sensitivity, breeding phenology, and possible topographic shielding. Loss of an active nest site, incubating adults, eggs, or young would violate the MBTA.

Two proposed well pad expansions containing 47 proposed wells and associated pipelines are located in areas that contain raptor nest locations. These locations could have seasonal protective buffers if it is determined that the nests are active. Seasonal protective buffers are currently in place for all raptor nest locations based on species-specific breeding season requirements (BLM 2008c).

Mitigation Measures for Migratory Birds

This EA is tiered to and incorporates the Applicant-committed resource protection measures and mitigation measures included in Attachment 1 of the GDBR ROD (BLM 2008c). Refer to Section 2.2.14 (*Applicant Committed Resource Protection Measures*) of this EA for Applicant-committed resource protection measures that are specific to well pads and development in the Project Area. No additional mitigation measures were identified for non-USFWS designated wildlife species during preparation of this EA.

Threatened, Endangered, Proposed, or Candidate Wildlife Species

Greater Sage-Grouse

The Proposed Action would result in approximately 26.7 acres of surface disturbance in UDWR identified greater sage-grouse brood rearing, occupied, and winter habitat (UDWR 2013), which IM 2012-043 identifies as Preliminary Priority Habitat (PPH) area for greater sage-grouse² No surface disturbance would occur in identified Preliminary General Habitat (PGH). According to UDWR GIS data there are no known greater sage-grouse leks within five miles of the Project Area. (UDWR 2013). Direct impacts to greater sage-grouse may include the loss and/or modification of sagebrush communities, increased collision potential associated with vehicle traffic, as well as increased predation by raptors, corvids, and coyotes. Indirect impacts to greater sage-grouse may include decreased suitable nesting and foraging habitat, increased habitat fragmentation due to increased development in the Project Area, increased noise levels and human presence, dispersal of noxious weeds and invasive plant species, and dust effects from unpaved road traffic.

Although proposed development would result in an estimated 26.7 acres of surface disturbance in greater sage-grouse PPH, due to the lack of known leks and no recent observations or records of greater sage-grouse in the Project Area, the Proposed Action would not result in more than minor adverse effects to greater sage-grouse and its habitat. Since the Proposed Action would not have more than minor adverse impacts the policies and procedures set forth in in BLM IM 2012-043 (*Greater Sage-Grouse Interim Management Policies and Procedures*) would not apply.

² Per WO IM 2012-043, Preliminary Priority Habitat comprises areas that have been identified as having the highest conservation value to maintaining sustainable greater sage-grouse populations. These areas would include breeding, late brood-rearing, and winter concentration areas. Preliminary General Habitat comprises areas of occupied seasonal or year-round habitat outside of priority habitat.

The BLM coordinated with UDWR for Greater sage-grouse on July 19, 2014. UDWR indicated that there is no recent documentation of Sage-grouse occurrence within the Project Area (Maxfield, 2014).

Colorado River Fish Species

The Proposed Action would result an estimated 162.5 acre-feet of water depletions from removal of water from the Upper Colorado River Drainage System for dust abatement, construction, and drilling operations. Potential impacts to Colorado River fish species would be similar to those described above for Fish Species and Fisheries.

Therefore, the Proposed Action “*may affect, is likely to adversely affect*” the endangered Colorado pikeminnow, humpback chub, bonytail, and razorback sucker, as described in the GDBR Final EIS (BLM 2008a). The Proposed Action may also affect individuals of bluehead sucker, roundtail chub, and flannelmouth sucker, but it would not result in a trend toward the listing of the species. The Proposed Action is within the scope of the Section 7 consultation that was completed and documented in Final Biological Opinion (Attachment 3) of the GDBR ROD (BLM 2008c).

The USFWS determined that any water right number filed before 1988 is a historic depletion and not required to pay depletion fees (*Instruction Memorandum FWS/R6 FR-ES 2006, Programmatic Water Depletion Biological Opinion for Oil and Gas Development Administered or Permitted by the Bureau of Land Management*). Refer to section 3.6.9 (pages 3–67 through 3–69) in the GDBR Final EIS (BLM 2008a) for more information on special status fish species.

Refer to Section 4.6.1.1 (page 4-39 through 4-40) in the GDBR Final EIS (BLM 2008a) and the Final Biological Opinion in the GDBR ROD (BLM 2008c) for additional information on water depletions and potential impacts to special status fish species.

Mitigation Measures for Threatened, Endangered, Proposed or Candidate Wildlife Species

This EA tiers to and incorporates the Applicant-committed resource protection measures and mitigation measures included in the GDBR ROD (BLM 2008c). Refer to Section 2.2.14 (*Applicant Committed Resource Protection Measures*) of this EA for applicant-committed resource protection measures that are specific to well pads and development in the Project Area. No additional mitigation measures were identified for threatened, endangered, proposed or candidate species during preparation of this EA.

4.2. No Action Alternative Environmental Impacts

Under the No Action Alternative, there would be no impacts from the Proposed Action as the proposed development would be denied. Under the No Action Alternative, currently approved oil and gas development and other activities in the Project Area would continue. Development of existing wells and associated infrastructure in the Project Area has resulted in approximately 306.1 acres of surface disturbance. Refer to Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9) for additional information on existing wells and surface disturbance in the Project Area and associated surface disturbance.

4.2.1. Air Quality and Greenhouse Gas Emissions

Under the No Action Alternative, QEP would not develop the proposed gas wells or develop the associated pipelines and infrastructure. Effects on ambient air quality would continue at present levels from existing oil and gas development in the region until the wells are abandoned and plugged. Refer to Section 4.3.1.2 (page 4-11) in the GDBR Final EIS (BLM 2008a) for additional information on potential air quality impacts under the No Action Alternative.

4.2.2. Invasive Plants/Noxious Weeds, Soils, and Vegetation

Development of existing wells in the Project Area has resulted in approximately 306.1 acres of surface disturbance (Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9)) resulting in direct and indirect impacts to invasive plants/noxious weeds, soils and vegetation similar to those effects described above for the Proposed Action. Under the No Action Alternative, there would be no direct disturbance or indirect effects to vegetation or soils from surface-disturbing activities associated with the Proposed Action. Refer to Section 4.4.1.2 (pages 4-15 and 4-16) and Section 4.5.1.2 (pages 4-21 and 4-23) in the GDBR Final EIS (BLM 2008a) for more information on soil and vegetation impacts under the No Action Alternative.

4.2.3. Livestock Grazing and Rangeland Health Standards

Under the No Action Alternative, there would be no direct disturbance or indirect effects such as fragmentation. Therefore, no impact to the Antelope Draw allotment, livestock AUMs, or the allotment’s compliance with Rangeland Health Standards would occur. Refer to Section 4.11.1.2 (page 4-60) in the GDBR Final EIS (BLM 2008a) for more information on livestock grazing and rangeland health standards impacts under the No Action Alternative.

4.2.4. Wildlife

Non-USFWS Designated Wildlife

The development of existing wells in the Project Area has resulted in approximately 306.1 acres of existing surface disturbance (Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9)) resulting in direct and indirect impacts to wildlife habitat and available forage for big game species, white-tailed prairie dog, and fish species and fisheries similar to those effects described above for the Proposed Action. Under the No Action Alternative, there would be no direct disturbance to non-USFWS designated wildlife or their habitat from surface-disturbing activities associated with the Proposed Action. Refer to Section 4.6.1.2 (pages 4-40 and 4-48) in the GDBR Final EIS (BLM 2008a) for more information on impacts to non-USFWS designated wildlife species under the No Action Alternative.

Migratory Birds (including raptors)

The development of existing wells in the Project Area has resulted in approximately 306.1 acres of surface disturbance (Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9)) resulting in direct and indirect impacts to migratory birds similar to those effects described above for the Proposed Action. Under the No Action Alternative, there would be no direct disturbance to migratory birds or raptor species from surface-disturbing activities associated with the Proposed Action or installation of power lines. Refer to Section 4.6.1.2 (page 4-41 through 4-43) in the

GDBR Final EIS (BLM 2008a) for more information on impacts to migratory birds and raptor species under the No Action Alternative.

Threatened, Endangered, Proposed, or Candidate Wildlife Species

Greater Sage-Grouse

The development of existing wells and associated facilities in the Project Area has resulted in approximately 156.4 acres of surface disturbance within occupied sage-grouse habitat resulting in direct and indirect impacts to greater sage-grouse similar to those effects described above for the Proposed Action. Under the No Action Alternative, the well pad expansions, construction of surface and buried pipelines and power lines would not occur. Therefore, there would be no direct or indirect disturbance to greater sage-grouse PPH habitat. Refer to Section 4.6.1.2 (pages 4-46 and 4-47) in the GDBR Final EIS (BLM 2008a) for more information on impacts to Greater Sage-Grouse under the No Action Alternative.

Colorado River Fish Species

Under the No Action Alternative, there would be no direct impacts to threatened, endangered, or candidate fish species in the Colorado River Basin from surface-disturbing activities or water depletions associated with the Proposed Action. Refer to Section 4.6.1.2 (pages 4-47 through 4-48) in the GDBR Final EIS (BLM 2008a) for more information on impacts to USFWS designated threatened, endangered, or candidate fish species under the No Action Alternative.

Chapter 5. Reasonably Foreseeable Development and Cumulative Impacts

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Cumulative impacts are those impacts that result from the incremental impact of each alternative when added to other past, present, and reasonably foreseeable actions, regardless of which agency or person undertakes such other actions. Each section below identifies the Cumulative Impact Analysis Areas (CIAAs) for individual resources and resource issues and the rationale for the selection of each area.

Proposed drilling, surface disturbance, and other activities under the Proposed Action (as described in Chapter 2 of this EA) are within the bounds of the cumulative impact analysis in the GDBR Final EIS (BLM 2008a). The GDBR Final EIS (BLM 2008a) identified past, present and reasonably foreseeable development for oil and gas activities in the Uinta Basin, and analyzed cumulative impacts to resources and resource uses from the drilling and development of oil and gas resources in the GDBR. As a result, the cumulative impact analysis in this chapter tiers to and incorporates by reference the analysis in the GDBR Final EIS (BLM 2008a). The analysis in this chapter provides additional site-specific analysis and information, where appropriate, to inform decision-making on this specific development proposal.

5.1. Past, Present, and Reasonably Foreseeable Development

Past, present, and reasonably foreseeable future development in the GDBR primarily includes oil and gas development; other significant activities include livestock grazing, vegetation management through prescribed burning, and recreational projects. Past, present, and reasonably foreseeable future oil and gas development in the GDBR has resulted and will continue to result in approximately 26,093 acres of surface disturbance. ¹Refer to Section 5.2 (pages 5-1 through 5-12) in the GDBR Final EIS (BLM 2008a) for additional information on past, present, and reasonably foreseeable development.

5.2. Cumulative Impacts

5.2.1. Air Quality and Greenhouse Gas Emissions

The CIAA for air quality is the Uinta Basin. The potential impact of the Proposed Action to Uinta Basin ozone levels cannot be accurately modeled. In lieu of accurate modeling, the Greater Natural Buttes (GNB) Final EIS Air Quality Technical Support Document (BLM 2012b), which is the most recent regional air model information available for the Uinta Basin, and the GNB Final EIS (BLM 2012a) Section 5.3.1, are incorporated by reference and summarized below. The GNB Final EIS (BLM 2012a) discloses that most of the cumulative emissions in the Uinta Basin are associated with oil and gas exploration and production activities. Consequently, past, present, and reasonably foreseeable wells in the Uinta Basin are a part of the cumulative actions considered in this analysis. Table 5.1, “2006 Uinta Basin Oil and Gas Operations Emissions Summary” (p. 54) summarizes the 2006 Uinta Basin emissions as well as the incremental impact of this project’s alternatives. The Proposed Action comprises a small percentage of the Uinta Basin emissions summary.

¹ The surface disturbance acreage includes past, present, and reasonably foreseeable future projects in the GNBPA, including surface disturbance of the selected alternative in the GNB ROD (BLM 2012d), which incorporates disturbance from the Proposed Action in this EA. Refer to tables 5.2-2 and 5.2-3 in the GNB Final EIS (BLM 2012a) for a description of the past, present, and reasonably foreseeable future projects included in the surface disturbance acreage estimates.

Table 5.1. 2006 Uinta Basin Oil and Gas Operations Emissions Summary

County	NO _x (tpy)	CO (tpy)	SO _x (tpy)	PM (tpy)	VOC (tpy)
Uintah	6,096	4,133	247	344	45,646
Carbon	995	814	22	40	2,747
Duchesne	3,053	2,448	96	173	19,019
Grand	337	207	16	22	2,360
Emery	273	199	9	14	453
Uinta Basin Total	10,754	7,800	391	592	70,226
Proposed Action	980.3	273.4	57.3	71.8	161.9
No Action	0	0	0	0	0

Source: BLM 2012a, Table 5.3-1

CO Carbon monoxide
PM Particulate Matter
SO_x Oxides of Sulfur
tpy Tons Per Year
VOC Volatile Organic Compound

The GNB model predicted the following impacts to air quality and air quality related values for the GNB Proposed Action, which encompassed 3,675 new wells:

- Cumulative impacts from criteria pollutants to ambient air quality are well below the NAAQS at Class I airsheds and selected Class II areas.
- The incremental impacts to visibility would be virtually impossible to discern and would not contribute to regional haze at the Class I areas.
- The 2018 projected baseline emissions would result in impacts of 1.0 deciview for at least 201 days per year at the Class II areas.
- Discernible impacts at Flaming Gorge National Recreation Area and Dinosaur National Monument were anticipated.
- The GNB Final EIS proposed action would contribute less than 1 percent to the acid deposition in Class I areas, and 4.3 percent at the Flaming Gorge Class II area.
- Project-related acid deposition impacts at sensitive lakes were below the USFWS screening threshold.
- Ozone levels would be below the current ozone standard of 75 parts per billion (ppb) for the fourth highest annual level in the Uinta Basin for the 2018 projected baseline, and the Proposed Action would be approximately 3.2 percent of the cumulative ozone impact within the Uinta Basin.

Based on the GNB model results, it is anticipated that the impact to ambient air quality and air quality related values associated with the Proposed Action would be indistinguishable from, and dwarfed by, the margin of uncertainty associated with the model and Uinta Basin emission inventory. The No Action Alternative would not contribute to cumulative impacts.

Greenhouse Gases

Inconsistent results based on scientific models used to predict global climate change prohibit the BLM from quantifying cumulative impacts. Drilling and development activities from the

Proposed Action are anticipated to release a negligible amount of greenhouse gases, into the local airshed, resulting in a negligible cumulative impact. The No Action Alternative would not contribute to cumulative impacts.

5.2.2. Invasive Plants/Noxious Weeds, Soils, and Vegetation

The CIAA for soils, vegetation, and invasive plants/noxious weeds is the GDBR, a 98,785-acre area (BLM 2008a). Cumulative impacts are primarily attributable to oil and gas development. Past, present, and reasonably foreseeable future actions would cumulatively and incrementally affect erosion and sedimentation rates within this area, current land uses, revegetation and reclamation success, soil productivity, and the potential introduction and/or spread of noxious weeds and invasive species. Surface-disturbing activity that removes native vegetation and topsoil from the CIAA may cumulatively and incrementally affect general vegetation by fragmenting plant communities and increasing competition with invasive and noxious weeds. Surface-disturbing activities that compact soil, increase erosion and sediment yield, and increase fugitive dust may also cumulatively and incrementally affect general vegetation, as such changes to the landscape may decrease plant productivity and composition in the CIAA.

The past, present, and reasonably foreseeable future total area of disturbance due to oil and gas activity in the CIAA is estimated at 31,175 acres (BLM 2008a), which includes the estimated disturbance from the selected alternative in the GDBR ROD (BLM 2008c). The Proposed Action would contribute 64 acres to the incremental increase in surface disturbance approved in the GDBR ROD (BLM 2008c).

Surface disturbance would reduce soil productivity, disturb vegetation communities, and accelerate erosion for the lifetime of oil and gas production until such time that final reclamation is deemed successful in terms of soil stability and soil productivity as measured by amounts and types of vegetative cover and forage. Each acre of disturbance also destroys native vegetation and vegetative cover and introduces or spreads undesired plant species, which may reduce species biodiversity. Noxious weeds and invasive species already exist throughout the CIAA. In general, soils in the Uinta Basin are very thin, slow to develop, and difficult to reclaim because of the arid climate and lack of organic material. Refer to Section 5.3.4 (pages 5-17 through 5-18) of the GDBR Final EIS (BLM 2008a) for additional information on cumulative impacts to soils. Refer to Section 5.3.5 (page 5-18) of the GDBR Final EIS (BLM 2008a) for additional information on cumulative impacts to vegetation, including weeds. The No Action Alternative would not contribute to cumulative impacts.

5.2.3. Livestock Grazing and Rangeland Health Standards

The CIAA for livestock grazing and Rangeland Health Standards is the Antelope Draw allotment, which is an active sheep allotment that covers approximately 55,898 acres of public, state, and private land, 32,296 acres of this allotment overlaps the GDBR. There has been and continues to be extensive oil and gas development within the Antelope Draw allotment.

Past, present, and reasonably foreseeable future actions would cumulatively and incrementally reduce available acres from active grazing preference and would reduce the associated available active AUMs for the lifetime of oil and gas development and production until such time that reclamation is deemed successful.

The Proposed Action for the GDBR would result in the removal of 4,561 acres of vegetation in grazing allotments in the GDBR during the development period (which includes the Proposed Action analyzed in this EA).

In addition to cumulative available forage and loss of AUMs in the Antelope Draw allotment, the development of access roads have had, and would continue to have, both adverse and beneficial impacts on the livestock grazing activities and resources.

Re-routing of access roads and increased vehicle activity and human presence associated with the Proposed Action, combined with other past, present, and future projects would provide additional access to portions of the allotment that currently do not have access. Roads could also increase livestock distribution in some areas, but also could disrupt distribution patterns. Increased livestock distribution would occur in some areas that have previously been inaccessible due to terrain limitations, distance from water, or a combination of both. Roads may also increase vehicular traffic, contributing to potentially adverse disturbance and increases in mortality to livestock from off-highway vehicle (OHV) users and those seeking dispersed recreational opportunities. Roads also would result in an increase in the spread of weeds. Specifically in the CIAA, the spread of halogeton into disturbed areas would have impacts for livestock operators as it decreases native forage and can lead to livestock mortality. In addition, the new roads and utility ROWs would increase the fragmentation of the allotment, which could result in the reduction of native vegetative communities and decrease available forage. The No Action Alternative would not contribute to cumulative impacts.

Rangeland Health Standards

Past, present, and reasonably foreseeable future actions in the allotment include oil and gas and other infrastructure development that has resulted in cumulative surface disturbance in the CIAA resulting in cumulative impacts to the productivity of soils and the amount and quality of desired vegetation for foraging animals. The Proposed Action would add an additional 64 acres of surface disturbance (loss of 3.8 AUMs) and affect the ability of the allotment to achieve BLM Utah Rangeland Health Standards.

If interim and/or final reclamation for past, present, and reasonably foreseeable future development is not successful, or is delayed due to drought conditions, livestock grazing and Rangeland Health Standards will continue to be negatively affected. If future quantitative monitoring data substantiates a downward trend in range conditions in this allotment, changes in management including reduction in AUMs, may be implemented to meet or continue to meet objectives. The No Action Alternative would not contribute to cumulative impacts.

5.2.4. Wildlife

Non-USFWS Designated Wildlife

Big Game Species

The CIAA for non-USFWS designated big game species is the GDBR, a 98,785-acre area (BLM 2008b). Cumulative impacts associated with surface-disturbing activities, including ongoing and planned oil and gas activities, in combination with the Proposed Action would cumulatively contribute to habitat fragmentation, habitat loss, loss of foraging opportunities, and animal displacement, until successful final reclamation. Cumulative impacts could also lead to mortality of small or slow-moving wildlife due to construction equipment and vehicle collisions. Impacts

to non-USFWS designated wildlife species would be relative to the amount of cumulative habitat loss and disturbance from incremental development, especially in sensitive habitat (e.g., year-long crucial habitat) (BLM 2008a).

The past, present, and reasonably foreseeable future total area of disturbance due to oil and gas activity in the CIAA is estimated at 31,175 acres (BLM 2008a), which includes the estimated disturbance from the selected alternative in the GDBR ROD (BLM 2008c). The Proposed Action would contribute 64 acres to the incremental increase in the GDBR ROD (BLM 2008c).

Refer to Section 5.3.6 (page 5-18 through 5-19) in the GDBR Final EIS (BLM 2008a) for more information on cumulative impacts to non-USFWS designated wildlife and big game species and their habitat. The No Action Alternative would not contribute to cumulative impacts.

White-Tailed Prairie Dog

The CIAA for white-tailed prairie dog is the Greater Uinta Basin as described in the BLM Vernal Field Office Cumulative Impact Technical Support Document (BLM 2012c). The past, present, and reasonably foreseeable future total area of disturbance due to oil and gas activity in the CIAA is estimated at 67,436 acres (Table 13) (BLM 2012a). The Proposed Action would result in 64 acres of surface disturbance with some disturbance occurring in white-tailed prairie dog habitat. Surface disturbances associated with oil and gas projects in the CIAA would have direct and indirect cumulative effects on white-tailed prairie dog populations through loss of habitat, introduction of invasive and noxious plant species, reduced cover and forage quality, reduction in existing population size, changes in species composition, and increased potential for direct mortality from predation and increased vehicular traffic. Refer to Section 5.3.6 (pages 5-18 through 5-19) in the GDBR Final EIS (BLM 2008a) for more information about cumulative impacts to white-tailed prairie dogs. The No Action Alternative would not contribute to cumulative impacts.

Fish Species and Fisheries

The CIAA for potential impacts to non-USFWS designated fish species and fisheries is the entire BLM Vernal Field Office management area. Cumulative effects to fisheries resources would primarily be associated with increased potential for erosion and sedimentation in the Colorado River Basin, and water depletions associated with existing and continued oil and gas developments. Deteriorated waterways due to erosion and sedimentation increases in the CIAA waterways would affect fish spawning, fish rearing, and feeding behaviors (BLM 2008a). Water depletions associated with the Proposed Action, in combination with depletions from other activities in the CIAA, would reduce the ability of the Upper Colorado River Basin to create and maintain the physical habitat (areas inhabited or potentially habitable to special status fish for use of spawning, development of fish larvae, feeding, or serving as corridors between these areas) and the biological environment for the Colorado River Endangered Fish Species.

The Proposed Action would result an estimated 162.5 acre-feet of water depletions and combined with other past, present, and reasonably foreseeable future projects, would reduce the volume of flow in the Colorado River Basin. As a result, implementation of the Proposed Action or alternatives, in combination with other activities in the CIAA, would degrade USFWS-designated critical habitat for the fish species and fisheries in the Colorado River Basin. Refer to Section 5.3.6 (pages 5-18 through 5-19) in the GDBR Final EIS (BLM 2008a) for more information on cumulative impacts to fisheries and surface water resources. The No Action Alternative would not contribute to cumulative impacts.

Migratory Birds (including raptors)

The CIAA for migratory birds, including raptors, is the GDBR. Surface disturbance associated with past, present, and reasonably foreseeable actions, including ongoing and planned oil and gas activities, would cumulatively reduce the amount of available cover, foraging opportunities, habitat productivity, and breeding/nesting areas for migratory birds until successful final reclamation. Human activities would result in short-term or long-term site avoidance, or would preclude migratory birds from using areas of more intensive human activity and could increase the potential for collisions between raptors and vehicles. In general, the severity of the cumulative effects would depend on factors such as the sensitivity of the species affected, seasonal intensity of use, type of project activity, and physical parameters (e.g., topography, forage, and cover availability).

Direct surface disturbance and removal of vegetation from cumulative activities in the Vernal RMP area are estimated to occur on 187,363 acres between 2008 and 2018. Oil and gas activities would account for 16.5 percent of the total vegetation impact, and the GDBR project would specifically account for approximately 2.5 percent (BLM 20008a). The Proposed Action would contribute 64 acres to the incremental increase in surface disturbance included in the GDBR ROD (BLM 2008c). The No Action Alternative would not contribute to cumulative impacts.

Threatened, Endangered, Proposed, or Candidate Wildlife Species

Greater Sage-Grouse

The CIAA for Greater Sage-Grouse is the Greater Uinta Basin as described in the BLM Vernal Field Office Cumulative Impact Technical Support Document (BLM 2012c). The Proposed Action would result in an estimated 26.7 acres of surface disturbance within greater sage-grouse PPH. Direct cumulative impacts include declines in the abundance or range of greater sage-grouse, disturbance and removal of habitat in additional PPH and PGH areas for greater sage-grouse, which could decrease available cover, carrying capacity, foraging opportunities, breeding/nesting/lek habitat, and habitat productivity. Indirect cumulative impacts may include sage-grouse displacement from increased noise, vehicle traffic, and human presence following development and establishment of invasive plants and noxious plant species. The severity of the cumulative effects would depend on seasonal intensity of oil and gas use in the area, type of project activity, and physical parameters (e.g., topography, forage quality, cover availability, visibility, and noise presence).

The past, present, and reasonably foreseeable future total area of disturbance due to oil and gas activity in the CIAA is estimated at 67,436 acres (BLM 2012a). The Proposed Action would add 64 acres of new surface disturbance (less than 1 percent of the CIAA) from implementation of the Proposed Action in the long-term, which would incrementally contribute to the indirect cumulative impacts discussed above. The No Action Alternative would not contribute to cumulative impacts.

Colorado River Fish Species

The CIAA for potential impacts to Colorado River Fish Species is the entire BLM Vernal Field Office management area. Cumulative effects to Colorado River fish species would be similar to those described for non-USFWS designated fish species and fisheries above.

The Proposed Action would result an estimated 162.5 acre-feet of water depletions and when combined with other past, present, and reasonably foreseeable future projects, would reduce

the volume of flow in the Colorado River Basin. As a result, implementation of the Proposed Action or alternatives, in combination with other activities in the CIAA, would degrade USFWS-designated critical habitat for the Colorado River Endangered Fish Species in the Colorado River Basin. The No Action Alternative would not contribute to cumulative impacts.

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Chapter 6. Persons, Groups, and Agencies Consulted

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6.1. Agency and Tribal Consultation

US Fish and Wildlife Service: The BLM conducted programmatic consultation with the USFWS under Section 7 of the ESA as part of the GDBR EIS process. BLM initiated formal consultation on January 23, 2007, by submitting the Biological Assessment to the USFWS. The USFWS concluded consultation by signing a Biological Opinion on May 15, 2007. This project falls within the scope of the programmatic consultation; therefore, consultation is considered complete. For documentation of this process and additional information, refer to the Biological Opinion (Attachment 3) in the GDBR ROD (BLM 2008c).

Utah Division of Wildlife Resources: The BLM coordinated with UDWR for Greater sage-grouse on July 19, 2014. Brian Maxfield, Wildlife Conservation Biologist, for UDWR, stated that there was no recent documentation of sage-grouse within the Project Area (Maxfield 2014).

Utah State Historic Preservation Officer: In a letter dated January 8, 2004, the BLM initiated consultation with the Utah State Historic Preservation Officer (SHPO) under Section 106 of the National Historic Preservation Act as part of the GDBR EIS process (BLM 2008a). The SHPO replied in a letter dated January 26, 2004 that consultation concerning the undertaking would occur as the undertaking was developed. Consultation with SHPO for the site-specific development proposed in this EA was initiated in July of 2014. SHPO concurrence with the BLM's recommendation of "no historic properties affected" was received on August 6, 2014 (UT SHPO 2014, UT SHPO 2013a, UT SHPO 2013b, UT SHPO 2012a, UT SHPO 2012b).

Tribal Consultation: During the scoping period for the GDBR EIS, and in a letter dated January 8, 2004, BLM initiated consultation with the following Native American Tribes: Southern Ute Tribe, Navajo Nation, Paiute Indian Tribe of Utah, Pueblo of Zuni and Ute Mountain Ute, Hopi Tribe, Northern Ute Tribe, Shoshone-Bannock Tribe, and the Ute Indian Tribe. Scoping letters were received from the Hopi, Paiute, and the Southern Ute Tribes. The Southern Ute Tribe stated that no known impacts to sites sensitive to the tribe were expected to occur, but that new discoveries should be reported immediately. The Paiute Tribe expressed interest in the project and its impacts, and asked for future copies of the document. No specific concerns were identified. The Hopi Tribe expressed support for the identification and avoidance of prehistoric archaeological sites, and expressed interest in the need to identify and avoid those sites. Additional consultation occurred with the tribes during the public comment period. No responses were received. Consultation is therefore considered to be closed.

6.2. Summary of Public Participation

On September 2, 2014, the BLM posted notification of this EA on the BLM's Land Use Planning and NEPA register (e-planning) website at: https://www.blm.gov/epl-front-office/eplanning/nepa/nepa_register.do. To date, the BLM has not received any public comments or input.

6.3. List of Preparers

Table 6.1. List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
<i>BLM Preparers</i>		
Kevin Sadlier	Natural Resource Specialist	Project manager and quality control

Name	Title	Responsible for the Following Section(s) of this Document
BLM Interdisciplinary Team	-	Refer to Appendix A for the BLM Interdisciplinary Team Checklist that identifies BLM roles.
<i>NEPA Contractor – ICF International</i>		
John Priecko	Project Director	Senior level review of all content
Tanya Copeland	Project Manager	Chapters 1, 2
Kristin Salamack	Project Coordinator/Biologist	QA review of Chapters 3, 4, and 5 Chapters 3, 4, 5 and appendices
Lissa Johnson	Geographic Information Systems Lead	QA review of all content All maps and GIS calculations

Chapter 7. References Cited

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Appendix A. Interdisciplinary Team Checklist

Project Title: QEP Energy Company, Proposal to Directionally Drill Sixty-Three Wells from Three Expanded Well Pads, Uintah County, Utah

NEPA Log Number: DOI-BLM-UT-G010-2014-0209-EA

File/Serial Number:

Project Leader: Kevin Sadlier

DETERMINATION OF STAFF: (Choose one of the following abbreviated options for the left column)

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

Table A.1. Interdisciplinary Team Checklist

Determination	Resource/Issues	Rationale for Determination	Signature	Date
PI	Air Quality & Greenhouse Gas Emissions	Emissions from earth-moving equipment, vehicle traffic, drilling and completion activities, production operations, daily tailpipe and fugitive dust emissions, and other sources could adversely affect air quality and contribute to GHG Emissions.	Kevin Sadlier	7/17/2014
NP	BLM Natural Areas	None present per 2008 Vernal RMP and ROD/GIS layer review.	Kevin Sadlier	7/17/2014
NI	Cultural: Archaeological Resources	The cultural resource inventories identified one historic site in the Project Area. The site was evaluated as not eligible to the National Register of Historic Places (MOAC 2014). Based on project-specific Section 106 consultation, the SHPO and BLM have made a determination of no historic properties affected (36CFR800.4(d)(1)) for the proposed undertaking. Additionally, if a cultural site is uncovered during construction, activities in the vicinity would immediately cease and the AO would be notified.	Erin Goslin	7/15/2014
NI	Cultural: Native American Religious Concerns	Tribal consultation was conducted as part of the GDBR EIS (BLM 2008a). Tribal consultation did not identify any adverse effects to previously recorded historic properties or cultural resources important to tribes and the consultation was closed with publication of the Final GDBR EIS and ROD (BLM 2008a; BLM 2008c).	Erin Goslin	7/15/2014
NP	Designated Areas: Areas of Critical Environmental Concern	None present per 2008 Vernal RMP and ROD/GIS layer review.	Kevin Sadlier	7/17/2014
NP	Designated Areas: Wild and Scenic Rivers	None present per 2008 Vernal RMP/ROD and GIS layer review.	Kevin Sadlier	7/17/2014
NP	Designated Areas: Wilderness Study Areas	None present per 2008 Vernal RMP/ROD and GIS layer review.	Kevin Sadlier	7/17/2014
NP	Environmental Justice	No minority or economically disadvantaged communities or populations would be disproportionately adversely affected by the Proposed Action or alternatives.	Kevin Sadlier	7/17/2014
NP	Farmlands (prime/unique)	Prime or unique farmlands are not present in the Project Area, as designated by the NRCS.	Kevin Sadlier	7/17/2014

Determina- tion	Resource/Issues	Rationale for Determination	Signature	Date
NP	Fuels/Fire Management	No fire or fuel management activities are planned for the Project Area. The proposed project would not conflict with fire management activities due to the use of existing and proposed well pad operations.	Kevin Sadlier	7/17/2014
NI	Geology/Minerals/ Energy Production	<p>No known gilsonite veins occur in the area; however, encounters with gilsonite during any surface or drilling operation must be reported to the BLM and should include location, depth, and thickness of the vein encountered.</p> <p>Natural gas, oil, gilsonite, oil shale and tar sand are the only mineral resources that could be impacted by the project. Production of natural gas or oil would deplete reserves, but the proposed project allows for the recovery of natural gas and oil per 43 CFR 3162.1(a), under the existing Federal lease. Compliance with “Onshore Oil and Gas Order No. 2, Drilling Operations” would assure that the project would not adversely affect gilsonite, oil shale, or tar sand deposits. Due to the state-of-the-art drilling and wells completion techniques, the possibility of adverse degradation of tar sand or oil shale deposits by the proposed action would be negligible.</p> <p>Well completion must be accomplished in compliance with “Onshore Oil and Gas Order No. 2, Drilling Operations.” These guidelines specify the following: ... proposed casing and cementing programs shall be conducted as approved to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use.</p>	Betty Gamber	7/11/2014
IP/NW: PI Soils: PI Veg: PI	Invasive Plants/ Noxious Weeds, Soils & Vegetation	<p>Under the Proposed Action, development of three well pad expansions and associated gathering pipelines, access roads, and power lines would result in an estimated 64 acres of surface disturbance until interim reclamation is successful.</p> <p>For all surface disturbance, the operator would recontour and reseed the soil after abandonment and during reclamation.</p> <p>QEP would control invasive species along roads, pipeline corridors, and on well pads as required in the Conditions of Approval (COAs) of the GDBR ROD (BLM 2008c) and as described in QEP’s Reclamation Plan for the Uinta Basin (QEP 2009). Even with application of COAs and other measures to monitor and control invasive plants and noxious weeds, establishment and spread could occur.</p>	IP/NW and Veg: Christine Cimiluca	7/10/2014

Determina- tion	Resource/Issues	Rationale for Determination	Signature	Date
NI	Lands/Access	<p>The Project Area is located within the Vernal Field Office Resource Management Plan planning area which allows for oil and gas development with associated road and pipeline right-of-ways.</p> <p>The re-route portion of the road is via Uintah County application and is being reviewed under NEPA doc. # DOI-BLM-UT-G010-2013-0065. Notice letters for that portion of the project were mailed on December 7, 2012; to date only one comment has been received from Moon Lake Electric Association. Moon Lake requests that proper clearance from the power line be obtained by QEPEC for the proposed well location; UCC has received a copy of the letter.</p>	Katie White Bull	7/18/2014
NP	Lands with Wilderness Characteristics (LWC)	None Present per 2008 Vernal RMP/ROD and GIS layer review.	Kevin Sadlier	7/17/2014
PI	Livestock Grazing & Rangeland Health Standards	<p>The proposed project would be located primarily in the Antelope Draw Allotment (>95 percent of the Project Area) and Split Mountain Allotment (<5 percent of the Project Area). The allotment is a continuous use allotment from November 16 through April 27. This allotment is in an “Improve” management category. The only identified range improvement in the Project Area is a sheep corral in Section 21. There are also small stock ponds located in Sections 21, 26, and 28. These ponds would be avoided by the proposed development.</p> <p>The Proposed Action would result in an estimated 64 acres of surface disturbance that could reduce the quantity and quality of forage, fragment the allotments, increase potential for vehicle/livestock collisions, increase potential for damage to range improvements, and result in other potential impacts to livestock operators and the ability of allotments to meet rangeland health standards.</p> <p>The Antelope Draw Allotment has been somewhat impacted by extensive energy developments and dry conditions. Large amounts of fragmentation, disturbance and forage loss throughout the allotment has led to multiple years of moderate to minimal use by the current grazing permittee and the Proposed Action could further contribute to declines in use.</p> <p>The proposed action may have a cumulative effect on livestock grazing as this area is heavily developed in oil and gas developments. The proposed action is small; however, the total amount of land taken out of production may result in a reduction in available forage to the grazing permittee and ultimately a permanent reduction in AUMS may occur, requiring compensation to the grazing permittee in the future for this loss.</p>	Craig Newman	7/15/2014

Determina- tion	Resource/Issues	Rationale for Determination	Signature	Date
NP	Paleontology	<p>Class III paleontological surveys were conducted for the Project Area by Intermountain Paleo Consulting and Uinta Paleo between 2012 and 2014. No scientifically important fossil locations were identified in the Project Area.</p> <p>No fossils were found; however Uinta Paleo noted a large number of known fossil occurrences within a mile of the western portion of the proposed truckline in the underlying geologic units (Uinta Paleo 2012). Uinta Paleo requested spot checking all excavation work wherever bedrock is impacted along the trunkline.</p> <p>Per the COAs in the GDBR ROD (BLM 2008c). If paleontological resources are uncovered during ground-disturbing activities, QEP would suspend all operation that would further disturb such materials and would immediately contact BLM's AO, who would arrange for a determination of significance and, if necessary, recommend a recovery or avoidance plan (BLM 2008c).</p>	Betty Gamber	7/14/2014
NI	Plants: BLM Sensitive	<p>The following Utah BLM sensitive plant species are present or expected within the same or an adjacent subwatershed and potential habitat: <i>Astragalus equisolensis</i>. However, no individuals or populations are present within the Project Area per BLM GIS review.</p> <p>Suitable soils and habitat for the following Utah BLM sensitive plant species are present in the Project Area, per BLM GIS review: <i>Astragalus hamiltonii</i> and <i>Penstemon goodrichii</i>. However, no individuals or populations have been documented in the Project Area.</p>	Christine Cimiluca	7/10/2014
NP	Plants: Threatened, Endangered, Proposed, or Candidate	<p>The following threatened, endangered, proposed, or candidate plant species are expected within the same or an adjacent subwatershed: Uinta Basin hookless cactus (<i>Sclerocactus wetlandicus</i>).</p> <ul style="list-style-type: none"> • This species occurs primarily along the Green River, the White River, and their tributaries. The Project Area is not located along these rivers or tributaries and lacks the course soils derived from cobble and gravel river terrace deposits in which this species is generally found (USFWS 2012). • No populations or potential habitat is present within the Project Area. 	Christine Cimiluca	7/10/2014
NI	Plants: Wetland/Riparian	<p>None are present in the Project Area per Vernal Field Office RMP and GIS and NWI data.</p>	Christine Cimiluca	7/10/2014

Determina- tion	Resource/Issues	Rationale for Determination	Signature	Date
NI	Recreation	No developed recreation sites/trails or Special Recreation Management Areas (SRMAs) exist within the Project Area. The Project Area is located in the Vernal Extensive Recreation Management Area (ERMA), which has limited recreational use. Based on the lack of existing developed recreation sites and use, impacts from implementation of proposed activities would be minimal.	Kevin Sadllier	7/17/2014
NI	Socio-Economics	No impact to the social or economic status of the county or nearby communities would occur from this project due to its small size in relation to ongoing development throughout the basin. Cumulative effects on socio-economic conditions resulting from past, present, and future development (including the Proposed Action) are described in the GDBR Final EIS (BLM 2008a)	Kevin Sadlier	7/17/2014
NI	Visual Resources	<p>All proposed development would be on VRM Class IV and be consistent with management objectives for this VRM Class.</p> <p>The Project Area is managed for VRM Class IV objectives. Class IV objectives state: “The objective for this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape may be high. These management activities may dominate the view and be the major focus of view attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements (BLM 1986).”</p> <p>Visual resources relevant to the Project Area can generally be characterized by landscape based high desert look consisting of natural browns and reds, rock outcrops, horizontal and vertical broken lines with sparse, low lying vegetation. Existing structures include abandoned well pads in various states of reclamation, existing drilling structures with associated movement, form, lines, textures, and colors.</p> <p>QEP would adhere to the Conditions of Approval in the GDBR ROD (BLM 2008c) to limit the potential for visual impacts resulting from the Proposed Action. As requested at the onsite for this development, facilities would be painted covert green.</p>	Kevin Sadlier	7/17/2014

Determination	Resource/Issues	Rationale for Determination	Signature	Date
NI	Wastes (hazardous/solid)	<p>No chemicals subject to reporting under SARA Title III (hazardous materials) in an amount greater than 10,000 pounds would be used, produced, stored, transported, or disposed of annually in association with the drilling, testing, or completing of wells. Furthermore, extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, would not be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completing of the proposed wells.</p> <p>Hazardous Waste: QEP would develop drilling and operational plans that cover potential emergencies including fire, employee injuries, chemical releases, and spill prevention. QEP and its contractors would comply with all applicable Federal laws and regulations governing the location, handling and storage of hazardous substances. QEP has evaluated its overall field operations within the GDBR and has prepared and implemented Spill Prevention, Control and Countermeasure Plans. The plans include accidental discharge reporting procedures, spill response and cleanup measures, and maintenance of dikes.</p> <p>Solid Waste: Trash would be confined in a trash cage and hauled to the Uintah County Landfill. Burning of waste or oil would not be done. Human waste would be contained and be disposed of at an approved sewage treatment facility.</p> <p>Produced Water: Where necessary produced water would be confined to an approved pit or storage tank for a period not to exceed 90 days as per Onshore Order No. 7 (OSO 7). After the 90 day period, the produced water will be contained in tanks on location and then hauled by truck to a pre-approved disposal site.</p> <p>Implementation of the measures described above, and consistency with all applicable laws, ordinances, regulations, and standards for hazardous materials and wastes would reduce the potential for impacts to a negligible level.</p>	Kevin Sadlier	7/17/2014
NI	Water: Floodplains	All proposed wells would be drilled from proposed well pad expansion sites and would avoid HUD and FEMA inventoried floodplains. None of the proposed well pad expansions, developments, or associated components cross HUD or FEMA inventoried floodplains.	Kevin Sadlier	7/17/2014

Determina- tion	Resource/Issues	Rationale for Determination	Signature	Date
NI	Water: Groundwater Quality	Ground Water: Compliance with “Onshore Oil and Gas Order No. 1 will assure that the project will not adversely affect groundwater quality. Due to the state-of-the-art drilling and wells completion techniques, the possibility of adverse degradation of groundwater quality or prospectively valuable mineral deposits by the Proposed Action would be negligible.	Betty Gamber	7/11/2014
NI	Water: Hydrologic Conditions (stormwater)	The proposed construction of the well pad locations and pipelines would alter the topography of the area to a small degree and change surface water flow patterns until the area is reclaimed. The three expanded well pads (and associated infrastructure) would have Spill Control and Countermeasure Plans in place, limiting the effects of construction to the landscape. Per the COAs in the GDBR ROD (BLM 2008), QEP would employ industry BMPs to control stormwater runoff, including appropriate measures to prevent disturbed sediments from reaching the drainage. Implementation of these measures would reduce the potential for impacts to negligible level.	Kevin Sadlier	7/17/2014
NI	Water: Surface Water Quality	The Proposed Action would result in approximately 64 acres of surface disturbance associated with three well pad expansions and other development, which may have the potential to negatively impact surface water quality. National Wetlands Inventory (NWI) data identified five human-modified freshwater ponds in the Project Area (NWI 2012). In addition to the three stock ponds mentioned above in Livestock Grazing, there is also an anode bed for cathodic protection in Section 27 and an industrial pond in Section 28. These ponds would be avoided by the proposed development. In addition, COAs and applicant-committed measures from the GDBR ROD (BLM 2008c) associated with surface disturbance, reclamation, and hydrology would likely reduce the potential for surface water impacts to a negligible level.	Kevin Sadlier	7/17/2014
NI	Water: Waters of the U.S.	The proposed 63 wells would be located on three expanded well pads. All wells would be directionally drilled and would not cross any identified wetlands or waters of the U.S. Development and production at the well sites would not significantly impact waters of the U.S.	Kevin Sadlier	7/17/2014
NI	Wild Horses	The Project Area is not located in a wild horse Herd Area/Herd Management Area. Therefore, impacts to wild horses are not anticipated as a result of the Proposed Action.	Kevin Sadlier	7/17/2014

Determina- tion	Resource/Issues	Rationale for Determination	Signature	Date
PI	Wildlife: Migratory Birds (including raptors)	<p>Migratory birds and raptors are present in the Project Area and could be affected by surface disturbance and other project-related activity. Based on review of available GIS data the following proposed development features are within spatial buffers for identified nests.</p> <ul style="list-style-type: none"> • Six ferruginous hawk nests identified throughout the Project Area. Four of these nests are in Section 21 approximately 0.25 to 0.5 mile from a proposed surface pipeline; one nest is in Section 22 just north of RW 22-22B; and one nest is in Section 27 just east of RW RW 42-28B. • Burrowing owl habitat located along the access road to well pad RW 42-26B. 	Dixie Sadlier	9/30/2014
PI	Wildlife: Non-USFWS Designated	<p>Activities associated with the Proposed Action may have adverse effects on general wildlife species.</p> <p>UDWR-designated pronghorn crucial yearlong habitat and fawning habitat overlaps the entirety of the Project Area.</p> <p>The Project Area does not overlap any crucial habitat for mule deer or elk.</p> <p>According to onsite notes, there is white-tailed prairie dog habitat in the Project Area by the access road along well pad RW 42-26B. The closest delineated prairie dog colony (Glen Bench) is located approximately 1 mile SW of the proposed buried pipeline associated with well pad RW 42-28B.</p> <p>Water depletions could affect fish species and fisheries in the Colorado River Basin.</p>	Dixie Sadlier	9/30/2014
PI	Wildlife: Threatened, Endangered, Proposed or Candidate	<p>There is no designated habitat for threatened and endangered species within the Project Area.</p> <p>Water depletions could affect threatened and endangered fish species in the Colorado River Basin.</p> <p>It was determined by the Fish and Wildlife Service that any water right number filed before 1988 is a historic depletion and not required to pay depletion fees (<i>Instruction Memorandum FWS/R6 FR-ES 2006, Programmatic Water Depletion Biological Opinion for Oil and Gas Development Administered or Permitted by the Bureau of Land Management</i>). Water rights associated with water supply for the Proposed Action were issued prior to 1988.</p>	Dixie Sadlier	9/30/2014

Determination	Resource/Issues	Rationale for Determination	Signature	Date
		<p>The Project Area is outside of the state of Utah's designated Sage-Grouse Management Areas (SGMAs) (UDWR 2013a). However, according to UDWR GIS Data layers for sage-grouse (UDWR 2013b), the following project features overlap greater sage-grouse brood rearing habitat, occupied habitat, and sage-grouse winter habitat, which is identified as Preliminary Priority Habitat (PPH) in BLM IM 2012-043:</p> <ul style="list-style-type: none"> • The proposed RW 42-26B well falls within BLM PPH. <p>Is the proposed project in sage-grouse PPH or PGH? (X) Yes No If the answer is yes, the project must conform with WO IM 2012-043.</p>		
NP	Woodlands/Forestry	None Present as per Vernal Field Office RMP/ROD and GIS database.	Kevin Sadlier	7/17/2017

Table A.2. Final Review

Reviewer Title	Signature	Date	Comments
Environmental Coordinator	/s/ Stephanie J Howard	9/30/14	
Authorized Officer	/s/ Jerry Kenczka	10/3/2014	

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Appendix B. Proposed New Wells and Associated Well Pads

Table B.1. Proposed New Wells and Associated Well Pads

Well Pad	Well Names	Surface	BHL
RW 22-22B	RW 2B1-22B	2081' FNL, 2328' FWL; SEC. 22; SEnw, T7S, R23E	177' FNL, 2298' FEL; SEC. 22; NWNE, T7S, R23E
	RW 2B4-22B	2092' FNL, 2337' FWL; SEC. 22; SEnw, T7S, R23E	506' FNL, 2298' FEL; SEC. 22; NWNE, T7S, R23E
	RW 2C1-22B	2102' FNL, 2346' FWL; SEC. 22; SEnw, T7S, R23E	837' FNL, 2300' FEL; SEC. 22; NWNE, T7S, R23E
	RW 2C4-22B	2113' FNL, 2354' FWL; SEC. 22; SEnw T7S, R23E	1168' FNL, 2298' FEL; SEC. 22; NWNE, T7S, R23E
	RW 3C4-22B	2277' FNL, 2490' FNL; SEC. 22; SEnw, T7S, R23E	1330' FNL, 1663' FWL; SEC. 22; NENW, T7S, R23E
	RW 4B1-22B	2237' FNL, 2094' FWL; SEC. 22; SEnw, T7S, R23E	181' FNL, 345' FWL; SEC. 22; NWNW, T7S, R23E
	RW 4B4-22B	2248' FNL, 2103' FWL; SEC. 22; SEnw, T7S, R23E	512' FNL, 345' FWL; SEC. 22; NWNW, T7S, R23E
	RW 4C1-22B	2259' FNL, 2112' FWL; SEC. 22; SEnw, T7S, R23E	839' FNL, 346' FWL; SEC. 22; NWNW, T7S, R23E
	RW 4C4-22B	2270' FNL, 2120' FWL; SEC. 22; SEnw, T7S, R23E	1172' FNL, 347' FWL; SEC. 22; NWNW, T7S, R23E
	RW 5B1-22B	2280' FNL, 2129' FWL; SEC. 22; SEnw, T7S, R23E	1499' FNL, 347' FNL; SEC. 22; SWNW, T7S, R23E
	RW 5B4-22B	2291' FNL, 2138' FWL; SEC. 22; SEnw, T7S, R23E	1830' FNL, 348' FWL; SEC. 22; SWNW, T7S, R23E
	RW 5C1-22B	2302' FNL, 2147' FWL; SEC. 22; SEnw, T7S, R23E	2163' FNL, 347' FWL' SEC. 22; SWNW, T7S, R23E
	RW 5C4-22B	2313' FNL, 2156' FWL; SEC. 22; SEnw, T7S, R23E	2488' FNL, 349' FWL; SEC. 22; SWNW, T7S, R23E
	RW 6B1-22B	2288' FNL, 2499' FWL; SEC. 22; SEnw, T7S, R23E	1659' FNL, 1664' FWL; SEC. 22; SEnw, T7S, R23E
	RW 6C1-22B	2299' FNL, 2508' FWL; SEC. 22; SEnw, T7S, R23E	2321' FNL, 1661' FWL; SEC. 22; SEnw, T7S, R23E
	RW 6C4-22B	2630' FSL, 2517' FWL; SEC. 22; SEnw, T7S, R23E	2630' FSL, 1667' FWL; SEC. 22; SEnw, T7S, R23E
	RW 7B1-22B	2124' FNL, 2363' FWL; SEC. 22; SEnw, T7S, R23E	1497' FNL, 2295' FEL; SEC. 22; SWNE, T7S, R23E
	RW 7B4-22B	2135' FNL, 2372' FWL; SEC. 22; SEnw, T7S, R23E	1830' FNL, 2298' FEL; SEC. 22; SWNE, T7S, R23E

Well Pad	Well Names	Surface	BHL
	RW 7C4-22B	2520' FNL, 2327' FWL; SEC. 22; SENW, T7S, R23E	2488' FNL, 2298' FEL; SEC. 22, SWNE, T7S, R23E
	RW 8B1-22B	2342' FNL, 2543' FWL; SEC. 22; SENW, T7S, R23E	1654' FNL, 982' FEL; SEC. 22; SENE, T7S, R23E
	RW 8B4-22B	2353' FNL, 2552' FWL; SEC. 22; SENW, T7S, R23E	1984' FNL, 983' FEL; SEC. 22; SENE, T7S, R23E
RW 22-22B	RW 10B1-22B	2531' FNL, 2336' FWL; SEC. 22; SENW, T7S, R23E	2465' FSL, 2294' FEL; SEC. 22; NWSE, T7S, R23E
	RW 11B1-22B	2321' FNL, 2525' FWL; SEC. 22; SENW, T7S, R23E	2302' FSL, 1666' FWL; SEC. 22; NESW, T7S, R23E
	RW 11C1-22B	2331' FNL, 2534' FWL; SEC. 22; SENW, T7S, R23E	1642' FSL, 1666' FWL; SEC. 22; NESW, T7S, R23E
	RW 12B1-22B	2456' FNL, 2274' FWL; SEC. 22; SENW, T7S, R23E	2460' FSL, 352' FWL; SEC. 22; NWSW, T7S, R23E
	RW 12B4-22B	2466' FNL, 2283' FWL; SEC. 22; SENW, T7S, R23E	2131' FSL, 352' FWL; SEC. 22; NWSW, T7S, R23E
	RW 12C1-22B	2477' FNL, 2291' FWL; SEC. 22; SENW, T7S, R23E	1800' FSL, 349' FWL; SEC. 22; NWSW, T7S, R23E
	RW 12C4-22B	2488' FNL, 2300' FWL; SEC. 22; SENW, T7S, R23E	1471' FSL, 352' FWL; SEC. 22; NWSW, T7S, R23E
	RW 13B1-22B	2499' FNL, 2309' FWL; SEC. 22; SENW, T7S, R23E	1143' FSL, 353' FWL; SEC. 22; SWSW, T7S, R23E
	RW 13B4-22B	812' FSL, 353' FWL; SEC. 22; SWSW, T7S, R23E	812' FSL, 353' FWL; SEC. 22; SWSW, T7S, R23E
	RW 15C1-15B	2059' FNL, 2310' FWL; SEC. 22; SENW, T7S, R23E	483' FSL, 2304' FEL; SEC. 15; SWSE, T7S, R23E
	RW 15C4-15B	2070' FNL, 2319' FWL; SEC. 22; SENW, T7S, R23E	157' FSL, 2304' FEL; SEC. 15; SWSE, T7S, R23E

Well Pad	Well Names	Surface	BHL
RW 42-26B	RW 8C4-268	1695' FNL, 534' FEL; SEC.26 ; SENE, T7S, R23E	2617' FSL, 982' FEL; SEC.26; NESE, T7S, R23E
	RW 8B4-26B	1681' FNL, 534' FEL; SEC. 26; SENE, T7S, R23E	2004' FNL, 980' FEL; SEC. 26; SENE, T7S, R23E
	RW 10B1-26B	1667' FNL, 534' FEL; SEC, 26; SENE, T7S, R23E	2459' FSL, 2298' FEL; SEC. 26; NWSE, T7S, R23E
	RW 2C4-26B	1653' FNL, 534' FEL; SEC. 26; SENE, T7S, R23E	1172' FNL, 2297' FEL; SEC. 26; NWNW, T7S, R23E
	RW 1C4-26B	1639' FNL, 534' FEL; SEC. 26; SENE, T7S, R23E	1341' FNL, 980' FEL; SEC. 26; SENE, T7S, R23E
	RW 1B4-26B	1625' FNL, 534' FEL; SEC. 26; SENE, T7S, R23E	679' FNL, 976' FEL; SEC. 26; NENE, T7S, R23E
	RW 16C4-23B	1611' FNL, 534' FEL; SEC. 26; SENE, T7S, R23E	21' FNL, 973' FEL; SEC. 26; NENE, T7S, R23E
	RW 16B4-23B	1597' FNL, 534' FEL; SEC. 26; SENE, T7S, R23E	637' FSL, 976' FEL; SEC. 23; SESE, T7S, R23E
	RW 12B4-25B	1696' FNL, 254' FEL; SEC. 26; SENE, T7S, R23E	2120' FSL, 337' FWL; SEC. 25; NWSW, T7S, R23E
	RW 5C4-25B	1682' FNL, 254' FEL; SEC. 26; SENE, T7S, R23E	2498' FNL, 338' FWL; SEC. 25; SWNW, T7S, R23E
	RW 5B4-25B	1668' FNL, 339' FEL; SEC. 26; SENE, T7S, R23E	1838' FNL, 254' FWL; SEC. 25; SWNW, T7S, R23E
	RW 6B4-25B	1654' FNL, 254' FEL; SEC. 26; SENE, T7S, R23E	1839' FNL, 1654' FWL; SEC. 25; SENW, T7S, R23E
	RW 4C4-25B	1640' FNL, 339' FEL; SEC. 26; SENE, T7S, R23E	1178' FNL, 254' FWL; SEC. 25; NWNW, T7S, R23E
	RW 4B4-25B	1626' FNL, 340' FEL; SEC. 26; SENE, T7S, R23E	518' FNL, 254' FWL; SEC. 25; NWNW, T7S, R23E
	RW 13C4-24B	1612' FNL, 254' FEL; SEC. 26; SENE, T7S, R23E	140' FSL, 348' FWL; SEC. 24; SWSW, T7S, R23E
	RW 13B4-24B	1598' FNL, 254' FEL; SEC. 26; SENE, T7S, R23E	805' FSL, 348' FWL; SEC. 24; SWSW, T7S, R23E

Well Pad	Well Names	Surface	BHL
RW 42-28B	RW 1B1-28B	1569' FNL, 275' FEL; SEC. 28; SENE, T7S, R23E	359' FNL, 977' FEL; SEC. 28; NENE, T7S, R23E
	RW 13B4-22B	1530' FNL, 289' FEL; SEC. 28; SENE, T7S, R23E	818' FSL, 354' FWL; SEC. 22; SWSW, T7S R23E
	RW 13C4-22B	1556' FNL, 280' FEL; SEC. 28; SENE, T7S, R23E	159' FSL, 357' FWL; SEC. 22; SWSW, T7S, R23E
	RW 15B4-21B	1612' FNL, 558' FEL; SEC. 28; SENE, T7S, R23E	814' FSL, 2303' FEL; SEC. 21; SWSE, T7S, R23E
	RW 15C4-21B	1625' FNL, 553' FEL; SEC. 28; SENE, T7S, R23E	170' FSL, 2301' FEL; SEC. 21; SWSE, T7S, R23E
	RW 16B1-21B	1516' FNL, 294' FEL; SEC. 28; SENE, T7S, R23E	973' FSL, 985' FEL; SEC. 21; SESE, T7S, R23E
	RW 16C1-21B	1534' FNL, 285' FEL; SEC. 28; SENE, T7S, R23E	312' FSL, 983' FEL; SEC. 21; SESE, T7S, R23E
	RW 1C4-28B	1664' FNL, 539' FEL; SEC. 28; SENE, T7S, R23E	1344' FNL, 980' FEL; SEC. 28; SENE, T7S, R23E
	RW 2C4-28B	1638' FNL, 548' FEL; SEC. 28; SENE, T7S, R23E	1165' FNL, 2298' FEL; SEC. 28; NWNE, T7S, R23E
	RW 4B4-27B	1582' FNL, 270' FEL; SEC. 28; SENE, T7S, R23E	500' FNL, 352' FWL; SEC. 27; NWNW, T7S, R23E
	RW 4C4-27B	1595' FNL, 266' FEL; SEC. 28; SENE, T7S, R23E	1162' FNL, 347' FWL; SEC. 27; NWNW, T7S, R23E
	RW 5C4-27B	1609' FNL, 261' FEL; SEC. 28; SENE, T7S, R23E	2478' FNL, 340' FWL; SEC. 27; SWNW, T7S, R23E
	RW 7B4-28B	1651' FNL, 543' FEL; SEC. 28; SENE, T7S, R23E	1825' FNL, 2301' FEL; SEC. 28; SWNE, T7S, R23E
	RW 7C4-28B	1677' FNL, 534' FEL; SEC. 28; SENE, T7S, R23E	2486' FNL, 2303' FEL; SEC. 28; SWNE, T7S, R23E
	RW 8B4-28B	1691' FNL, 529' FEL; SEC. 28; SENE, T7S, R23E	2004' FNL, 982' FEL; SEC. 28; SENE, T7S, R23E
	RW 8C4-28B	1704' FNL, 524' FEL; SEC. 28; SENE, T7S, R23E	2614' FSL, 985' FEL; SEC. 28; NESE, T7S, R23E